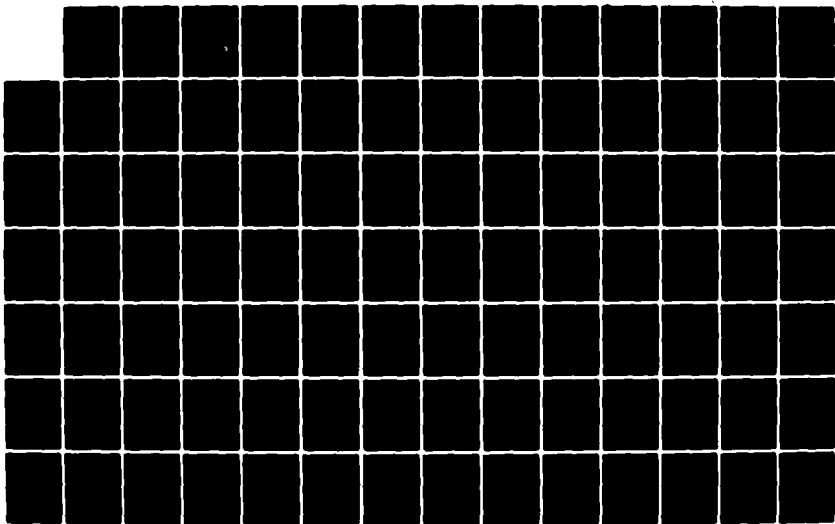


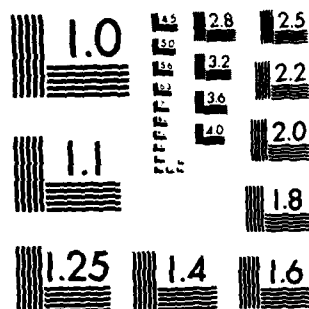
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AIRFOIL SECTIONS VOLUM..(U) NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION MOFFETT FIELD C..

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An Experimental Study of Dynamic Stall on Advanced Airfoil Sections Volume 2. Pressure and Force Data

K. W. McAlister, S. L. Pucci, W. J. McCroskey,
and L. W. Carr

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An Experimental Study of Dynamic Stall on Advanced Airfoil Sections

Volume 2. Pressure and Force Data

K. W. McAlister

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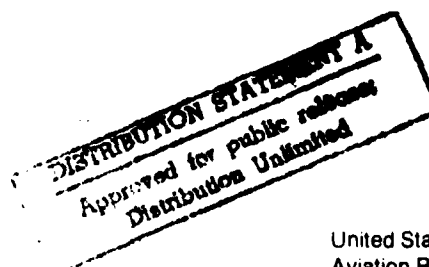
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National Aeronautics and
Space Administration

Ames Research Center
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St. Louis, Missouri 63166



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SYMBOLS

- c airfoil chord, m
- C_D drag coefficient derived from surface pressures, drag/qcs
- C_L lift coefficient derived from surface pressures, lift/qcs
- C_M moment coefficient derived from surface pressures, moment/qc²s
- C_p pressure coefficient, $(p - p_\infty)/q$
- k reduced frequency, $\omega c/2U_\infty$
- M Mach number
- p surface pressure, N/m²
- p_∞ free-stream static pressure, N/m²
- p_T free-stream total pressure, N/m²
- q free-stream dynamic pressure, N/m²
- Re Reynolds number based on chord and free-stream conditions
- s airfoil span, m
- t time, sec
- U_∞ free-stream velocity, m/sec
- x chordwise coordinate, m
- y normal coordinate, m
- α airfoil incidence, deg
- α_0 mean angle of oscillation, deg
- α_1 amplitude of oscillation, deg
- ζ aerodynamic pitch damping coefficient, $-\frac{1}{4\alpha_1^2} \oint C_M d\alpha$
- ω circular frequency, rad/sec

AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED AIRFOIL SECTIONS

VOLUME 2. PRESSURE AND FORCE DATA

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SUMMARY

Experimentally derived force and moment data are presented for eight airfoil sections that were tested at fixed and varying incidence in a subsonic two-dimensional stream. Airfoil incidence was varied through sinusoidal oscillations in pitch over a wide range of amplitude and frequency. The surface pressure distribution, as well as the lift, drag, and pitching moment derived therefrom, are displayed in a uniform fashion to delineate the static and dynamic characteristics of each airfoil both in and out of stall.

INTRODUCTION

The experiment reported in these volumes was undertaken to investigate the effects of airfoil geometry and free-stream Mach number on the phenomenon of dynamic stall. The experiment and its principal results are summarized in volume 1 (Summary of the Experiment), and boundary-layer transition, flow reversal, and reattachment results are presented in volume 3 (Hot-Wire and Hot-Film Measurements). Pressure, force, and moment data are contained in this volume.

Eight airfoil profiles, consisting of a NACA 0012 section, six rotor-blade sections, and a fixed-wing supercritical section (fig. 1 and tables 1-4), were tested at both fixed incidence and varying incidence, $\alpha = \alpha_0 + \alpha_1 \sin \omega t$, over a range of Mach numbers to 0.30. Because the intention was to fulfill the requirement for a data base applicable to the retreating-blade stall problem on helicopter rotors, most of the unsteady data accumulated can be classified as large amplitude (typically $\alpha_1 = 10^\circ$) and at fundamental reduced frequencies (typically $k \leq 0.20$). Although numerous diagnostic techniques were employed during the course of this study, the purpose of the present volume is to describe the pressure reduction phase of the experiment and to present both steady and unsteady results in a uniform graphical format.

DATA ACQUISITION

Although differential pressure measurements (obtained by referencing the upper surface to the lower surface at the same chord location) would have sufficed for deriving the normal force and pitching moment on the airfoil, single surface-pressure measurements were preferred because (1) they provided a more definitive observation of the formation and passage of the stall vortex over the upper surface of the airfoil and (2) they enabled the calculation of chord force (due to pressure only) and, later, the construction of lift and drag forces. These two considerations, in turn, strongly influenced the distribution of the pressure transducers around the airfoil (fig. 2 and table 5).

In all, 30 quantities were recorded in analog form on magnetic tape. These consisted of (1) airfoil incidence, α , (2) tunnel dynamic pressure, $p_T - p_\infty$, (3) airfoil surface pressures, p_1 through p_{26} , (4) 200/rev pulse train synchronous with ωt , and (5) 1/rev pulse synchronous with the beginning of each cycle of airfoil oscillation. The total pressure, p_T , was essentially invariant during the course of any given test case, and was therefore recorded by hand in the test log. Other quantities that originally appeared in the test log include (1) airfoil designation code; (2) type code for identifying the data as relating to reference voltage, amplifier gain, transducer calibration, reference zero, steady test data, or unsteady test data; (3) frequency, mean angle, and amplitude of oscillation; (4) free-stream and model-core temperatures; and (5) the real time at the beginning of each data frame. This information was later appended to the test data during the analog-to-digital conversion phase of the data reduction.

All analog signals were conditioned by amplifiers and recorded on a 32-channel magnetic tape machine at a tape speed of 0.4 m/sec. Approximately 65 analog tapes were required for the entire experiment. Because of the large quantity of data to be acquired and the impracticality of reviewing a test recording before proceeding to the next case, certain standards were adopted. At the discretion of the test engineer, transducers were mechanically exercised and allowed to reach the mean environmental temperature by operating the tunnel and airfoil at the test condition of interest. This pre-run rehearsal provided an opportunity not only for identifying anomalous transducer responses, but also for adjusting the gains for maximum output voltages in order to maximize the signal-to-noise ratio. The tunnel and airfoil were then brought to rest so that transducer signals could be rebalanced to near-zero output voltage. If the gain of any amplifier needed to be changed, all channels were switched to sense a fixed reference voltage and a brief recording made on analog tape. From this record the corresponding gains could be inferred and properly accounted for during the data-reduction phase.

Another practice, considered of equal importance, was to obtain zero-flow records on a frequent basis. Careful calibrations before the experiment indicated that acceptable transducer drifts due to time and temperature could be bounded by allowing no more than 20 min or a change of 1°F between zero records. Although individual transducer temperatures were not monitored, the model-core temperature was taken to be representative for the purpose of scheduling a zero record.

A standard procedure was also adopted for configuring data on magnetic tape so that each tape could be independently processed as well as reduced in an automatic fashion. These two requirements led to the following test procedures:

1. Initialize each tape with recordings of an electrical short and ± 1 V references
2. Record transducer gain evaluation voltages
3. Record prescribed sequence of pressure transducer calibrations
4. Record transducer gain evaluation voltages (if changed) before test cases
5. Record zero-flow signals before test cases (initial zero)
6. Record test cases
7. Record zero-flow signals following test cases (final zero)

8. Repeat (4) through (7) until near the end of the tape

9. Repeat (2) and (3) at the end of the tape

The technique used for systematically subjecting the transducers to given pressure levels is shown in figure 3. Shop air was used to continuously supply a tank to which six pressure regulators were attached. The regulators were preset to pressures of 0.3, 0.6, 1.0, 2.0, 3.0, and 5.0 psig. These six pressures, along with that from the tunnel pitot probe, were used as the pressure references for the test. By selecting any one of these seven pressure sources, the reference side of all pressure transducers in the model could be simultaneously exposed to either a calibration pressure or to the tunnel total-pressure. By using positive gage pressures for calibration references, the transducer diaphragms were deformed in the same direction as when the airfoil-surface sides of the transducers were exposed to suction during a test run. This procedure eliminated the need for calibrating through zero pressure. A detailed estimation of the uncertainty and accuracy of the pressure measurements is given in volume 1.

DATA REDUCTION

The first step in the data reduction process was the conversion of analog data to digital form. This required that each frame of data be replayed in real time, digitized using the 200/rev and 1/rev synchronizing signals, and stored on a digital tape. It was during this latter step that various test parameters recorded by hand in the log were coded and appended to each corresponding frame of data. A hardware incompatibility prevented the digitizer from responding to the 200/rev signal directly, and a synthetic pulse train based on this signal had to be substituted. Since the computed period for the synthetic signal was dependent on the period of the test data just completed on the analog tape, a slight fluctuation from cycle to cycle during the original recording of unsteady data sometimes resulted in a slightly incorrect synthetic period. As a result, ensemble averages of the digital data would correspond to specific values of ωt only in the mean, and the resulting periods would either fall short or go beyond the correct completion of the cycle. In order to render the data more amenable to analysis, it was decided that the unsteady data would be interpolated and reordered (to begin at mean angle) during the final stage of reduction. As explained in volume 1, the final data appear at convenient increments, but suffer an effective "smearing" that at worst would be equivalent to having sampled at a rate of 100 points per cycle instead of 200 points per cycle.

Once the data were placed on digital tape, they were transferred to a more versatile computer where (1) the unsteady data were ensemble-averaged, (2) the gain factors were divided out, (3) the time-averaged zero-flow values were calculated and subtracted, and (4) the calibrations were applied to scale the data to coefficient form. After imposing a Mach number correction to the pitot-static measurement, the instantaneous value of the dynamic pressure was used to calculate the pressure coefficients.

Airloads were computed using a simple trapezoidal rule integration around the airfoil. Since the pressure was not actually measured at the trailing edge, a value was calculated based on the average between upper and lower surface extrapolations from neighboring points. Curve-fitting the data was not attempted because of the possibility of irregular results as the vortex passed over the rear of the airfoil where transducers were relatively far apart.

The pressure was integrated over x to give the normal force and over y to give the chord force. Given the airfoil incidence, the normal and chord forces were used to calculate the lift and drag forces. Although the chord force contributes little to the pitching moment, its effect was included for completeness. Since viscous forces were not measured, the calculated chord force is incomplete, and hence the lift and drag forces must be regarded as approximate. This approximation is considered good, however, under conditions of unsteady large-amplitude motion where pressure forces are dominant. On the other extreme, the steady-flow drag data at low incidence should be interpreted with caution.

DATA PRESENTATION

Both steady and unsteady data have been graphically displayed (figs. 4-19) in a uniform format to facilitate comparison between cases. The axes scales for the lift, drag, and pitching-moment coefficients have been fixed. All unsteady cases have been plotted against ωt (beginning at minimum incidence) to more clearly show the resulting loads around maximum incidence. The unsteady loops that are created when the data are plotted against α have been divided into two parts, the solid portion corresponding to $\dot{\alpha} > 0$, and the dashed portion corresponding to $\dot{\alpha} < 0$. The dotted line appearing in the lift versus incidence plots represents an approximation of the quasi-static lift behavior at low incidence for the given flow condition (see vol. 1).

To simplify the presentation of pressure, the sign of the coefficient has been changed, the lower-surface values have been suppressed, and the upper-surface values skewed over time in a carpet fashion. The pressures at each x/c have been connected by a straight line and the leading-edge pressure has been identified by a bold-appearing dot. The first curve shows the pressure distribution at minimum incidence, and the succeeding curves correspond to equal increments in time ($\omega t = 18^\circ$) over one full cycle of airfoil oscillation. The scale of the ordinate is either 10 or 20, depending on the range of pressures to be displayed. The symbol $*$ appearing on the ordinate denotes the sonic pressure corresponding to the free-stream Mach number for that test case. A number of quantities characterizing a particular unsteady case have been included on each display. These are

1. Airfoil name and frame number
2. Average Reynolds number
3. Maximum lift force and the angle at which it occurs
4. Angle at which the minimum chord force occurs
5. Mean angle and amplitude of oscillation
6. Minimum value of pitching moment
7. Pitch-damping coefficient
8. Maximum suction detected during the cycle
9. Reduced frequency of oscillation
10. Free-stream Mach number

11. Maximum pressure drag

12. Maximum local Mach number based on minimum pressure, and the angle at which it occurs.

In the case of the steady-data displays, dashed lines denote data points reached from a stalled condition. The pressure distribution covers both upper and lower surface and corresponds to that obtained just before stall. References to the data, either by frame number (ordered according to their position of an archival tape) or test condition, are given in tables 6 to 19. Test cases for numerical analysis are shown in table 20.

All of the data presented in this volume have been archived on magnetic tape, according to airfoil. Although NASA is not responsible for the data, these data can be obtained by submitting a written request to the Computer Documentation Service, Ames Research Center, NASA, Moffett Field, California 94035. Archived data tape numbers for the eight airfoils are shown in table 21. The magnetic tapes were written in a widely compatible format, the attributes for which are given in table 22. The organization and format of the data on magnetic tape are given in the appendix, along with a definition of the argument symbols.

APPENDIX

PROGRAM FOR READING DATA TAPES ON THE CDC 7600 COMPUTER

SUBROUTINE RECALL (FRAME,INIT,LIST,INUNIT,LSUNIT,ID,X,Y,NPTS,TRIP,
1 ALPHA0,ALPHA1,AVEQ,AVEM,REC,RF,FREQ,NPANTS,ALPHA,Q,CP,CL,CD,CM,
2 PT,ERR)

```

C
C
C   Module Name:   RECALL
C   Author:       Ken McAlister
C   Date:         February 1981
C   Modifications: July 1981 by Steve Pucci
C                 December 1981 by Steve Pucci
C
C   Purpose:      This routine was designed to read one data frame
C                 from the data tapes produced from the 1979 oscillating
C                 airfoil experiment.
C
C   Inputs:       FRAME : The identifying number of the frame desired.
C                       If this number is input as zero, the next frame
C                       on the tape will be read.
C
C                 INIT  : If true, the subroutine will read off the
C                       initial data on the tape. For the normal
C                       airfoil tapes, this should be set to true for
C                       the first frame read from the tape, and false
C                       for all others. For the special tape generated
C                       for the AIAA paper 81-0051, this should be set
C                       to true for all frames.
C
C                 LIST  : If true, the subroutine will write a summary of
C                       the frame read.
C
C                 INUNIT: The unit number associated with the tape to be
C                       read.
C
C                 LSUNIT: The unit number associated with the listing, if
C                       one is desired.
C
C   Outputs:      ID    : The name of the airfoil tested in the data
C                       frame. Note that this, the following two
C                       arrays X and Y, and the value of NPTS are
C                       only changed in the subroutine if the input
C                       parameter INIT has been set to true (see
C                       inputs, above).
C
C                 X,Y   : The coordinates of the pressure transducers,
C                       normalized by the chord length, where 0,0 is
C                       at the leading edge of the airfoil.
C
C                 NPTS  : The length of the X,Y arrays, and the number
C                       of pressure transducers.
C
C                 TRIP  : This parameter is set to true if a boundary
C                       layer trip is present on the airfoil tested.
C
C                 ALPHA0: The mean angle of attack of the airfoil, in
C                       degrees.
C
C                 ALPHA1: The amplitude of the angle of attack oscilla-
C                       tion of the airfoil, also in degrees.
C
C                 AVEQ  : Average free-stream dynamic pressure, in PSI.
C
C                 AVEM  : Average free-stream Mach number.

```

C REC : Average Reynolds number based on chord.
 C RF : Reduced frequency of oscillation.
 C FREQ : Frequency of oscillation, Hz.
 C NPARTS: Number of time increments describing data.
 C ALPHA : Instantaneous airfoil angle of attack, degrees:
 Vector of length NPARTS.
 C Q : Instantaneous free-stream dynamic pressure, PSI:
 Vector of length NPARTS.
 C CP : Instantaneous surface pressure coefficient:
 Matrix of length (NPARTS,NPTS).
 C CL : Instantaneous lift coefficient;
 Vector of length NPARTS.
 C CD : Instantaneous drag coefficient:
 Vector of length NPARTS.
 C CM : Instantaneous moment coefficient:
 Vector of length NPARTS.
 C PT : Total pressure, PSI.
 C ERR : Returned true if:
 (1) FRAME was input as zero, and there are no
 more frames on the tape, OR
 (2) a specific FRAME was input, and that frame
 was not found on the tape.
 If ERR is returned as true, the tape has been
 rewound (but not yet initialized).
 C FRAME : If a frame has been found, this is its
 identifying number.

LOGICAL TRIP,INIT,ERR,LIST
 INTEGER FRAME

DIMENSION X(28),Y(28),ALPHA(200),Q(200),CP(200,28)
 DIMENSION CL(200),CD(200),CM(200),ID(40),WORDS(80)

DATA ITOTLN /45/

ITOTLN is the total number of lines that will fit on one page of
 output.

1000 FORMAT(1X,I5)
 1001 FORMAT(1X,80A1)
 1002 FORMAT(1X,I5,1X,L1,1X,I5,3(1X,E14.7))
 1003 FORMAT(5E14.7)
 C
 2000 FORMAT(1H1,32H...BRIEF SUMMARY OF DATA TAPE...,/)
 2001 FORMAT(/7H FRAME,1X,4HTWIP,3X,4HTYPE,5X,2HAO,9X,2HA1,8X,1HQ,
 1 10X,1HM,6X,2HRE,8X,1HK,8X,4HFREQ)
 2002 FORMAT(2X,I5,2X,L1,3X,8H STEADY,2X,2(F5.1,4H DEG,2X),F5.3,4H PSI,
 1 2X,F5.3,2X,F8.0,2X,F6.4,2X,F5.2,3H HZ)
 2003 FORMAT(2X,I5,2X,L1,3X,8HUNSTEADY,2X,2(F5.1,4H DEG,2X),F5.3,4H PSI,
 1 2X,F5.3,2X,F8.0,2X,F6.4,2X,F5.2,3H HZ)
 2004 FORMAT(/1X,11HDATA FOR...,80A1)
 2005 FORMAT(/1X,23HTRANSDUCER COORDINATES:/)
 2006 FORMAT(1X,3HNO.,I2,3X,4HX/C=,F10.6,3X,4HY/C=,F10.6)

```

2007 FORMAT(1H1,6H ALPHA,3X,1HQ,3X,13(2X,2HCP,I2,1X),4X,2HCL,
1      5X,2HCD,5X,2HCM)
2008 FORMAT(14X,13(2X,2HCP,I2,1X)/)
2009 FORMAT(2X,F5.1,1X,F5.3,1X,13(F6.2,1X),1X,F6.3,1X,F6.3,2X,F6.4)
2010 FORMAT(14X,13(F6.2,1X)/)
C
3000 FORMAT(///5X,13HFRAME NUMBER ,I6,24H NOT FOUND ON THIS TAPE)
3001 FORMAT (47H END OF PRIVATE DATA TAPE ENCOUNTERED ON UNIT 1)
C
C
C
      IF (.NOT.INIT) GO TO 100
C...The following section initializes the tape by reading off the header info.
      IF (LIST) WRITE (LSUNIT,2000)
      READ(INUNIT,1000) LINES
      IF(EOF(INUNIT).NE.0) GO TO 9000
      DO 10 N=1,LINES
        READ(INUNIT,1000) NUMBER
        READ(INUNIT,1001) (WORDS(I),I=1,NUMBER)
        IF (LIST) WRITE(LSUNIT,1001) (WORDS(I),I=1,NUMBER)
10     CONTINUE
      DO 20 N=1,40
        ID(N)=1H
20     CONTINUE
C...      ( initialize ID array )
      READ(INUNIT,1000) IDLEN
      READ(INUNIT,1001) (ID(I),I=1,IDLEN)
      IF (LIST) WRITE(LSUNIT,2004) (ID(I),I=1,IDLEN)
      READ(INUNIT,1000) NPTS
      READ(INUNIT,1003) (X(I),I=1,NPTS)
      READ(INUNIT,1003) (Y(I),I=1,NPTS)
      IF (LIST) WRITE(LSUNIT,2005)
      IF (LIST) WRITE(LSUNIT,2006) ((I,X(I),Y(I)),I=1,NPTS)
C
100  CONTINUE
C
      READ(INUNIT,1002) NUMBER,TRIP,NPARTS,ALPHA0,ALPHA1,PT
      IF(EOF(INUNIT).NE.0) GO TO 9000
      READ(INUNIT,1003) AVEQ,AVEM,REC,RF,FREQ
      DO 110 J=1,NPARTS
        READ(INUNIT,1003) ALPHA(J),Q(J),(CP(J,K),K=1,NPTS)
        READ(INUNIT,1003) CL(J),CD(J),CM(J)
110  CONTINUE
      IF(NUMBER.NE.FRAME.AND.FRAME.NE.0) GO TO 100
C
      FRAME=NUMBER
      ERR=.FALSE.
C
C
      IF(.NOT.LIST) RETURN
C
      WRITE(LSUNIT,2001)
      IF(NPARTS.EQ.1) WRITE(LSUNIT,2002) FRAME,TRIP,ALPHA0,ALPHA1,

```

```

1  AVEQ,AVEM,REC,RF,FREQ
   IF(NPARTS.NE.1) WRITE(LSUNIT,2003) FRAME,TRIP,ALPHA0,ALPHA1,
1  AVEQ,AVEM,REC,RF,FREQ
   NCOUNT=1
   ITOTCT = ITOTLN/3 - 1
   DO 200 J=1,NPARTS
     IF(NCOUNT.EQ.1) WRITE(LSUNIT,2007) (K,K=1,13)
     IF(NCOUNT.EQ.1) WRITE(LSUNIT,2008) (K,K=14,26)
     WRITE(LSUNIT,2009) ALPHA(J),Q(J),(CP(J,K),K=1,13),CL(J),CD(J),
1   CM(J)
     WRITE(LSUNIT,2010) (CP(J,K),K=14,26)
     NCOUNT=NCOUNT+1
     IF(NCOUNT.GT.ITOTCT) NCOUNT=1
200  CONTINUE
    RETURN
C
C
C...This routine is used when the end of the tape is reached.
9000 CONTINUE
    ERR = .TRUE.
C
    IF (FRAME.EQ.0) GO TO 600
    WRITE(LSUNIT,3000)FRAME
    REWIND INUNIT
    RETURN
C
600  WRITE (LSUNIT,3001)
    RETURN
    END

```

TABLE 1.- AIRFOIL COORDINATES: NACA 0012 AND AMES A-01 AIRFOILS

x/c	NACA 0012, y/c		AMES A-01, y/c	
	upper	lower	upper	lower
0.0000	0.00000	0.00000	0.00000	0.00000
0.0005	0.00395	-0.00395	0.00377	-0.00338
0.0010	0.00556	-0.00556	0.00541	-0.00472
0.0020	0.00781	-0.00781	0.00766	-0.00651
0.0035	0.01027	-0.01027	0.01013	-0.00844
0.0050	0.01221	-0.01221	0.01214	-0.00994
0.0065	0.01386	-0.01386	0.01388	-0.01120
0.0080	0.01531	-0.01531	0.01543	-0.01227
0.0100	0.01704	-0.01704	0.01732	-0.01350
0.0125	0.01894	-0.01894	0.01945	-0.01481
0.0160	0.02127	-0.02127	0.02214	-0.01634
0.0200	0.02360	-0.02360	0.02490	-0.01777
0.0250	0.02615	-0.02615	0.02801	-0.01922
0.0350	0.03043	-0.03043	0.03335	-0.02137
0.0500	0.03555	-0.03555	0.03991	-0.02365
0.0650	0.03966	-0.03966	0.04523	-0.02549
0.0800	0.04307	-0.04307	0.04961	-0.02710
0.1000	0.04683	-0.04683	0.05421	-0.02902
0.1250	0.05055	-0.05055	0.05829	-0.03104
0.1500	0.05345	-0.05345	0.06098	-0.03277
0.2000	0.05737	-0.05737	0.06344	-0.03551
0.2500	0.05941	-0.05941	0.06431	-0.03727
0.3000	0.06002	-0.06002	0.06446	-0.03828
0.3500	0.05949	-0.05949	0.06409	-0.03866
0.4000	0.05803	-0.05803	0.06316	-0.03848
0.4500	0.05581	-0.05581	0.06154	-0.03782
0.5000	0.05294	-0.05294	0.05924	-0.03665
0.5500	0.04952	-0.04952	0.05623	-0.03501
0.6000	0.04563	-0.04563	0.05249	-0.03297
0.6500	0.04132	-0.04132	0.04792	-0.03056
0.7000	0.03664	-0.03664	0.04246	-0.02785
0.7500	0.03160	-0.03160	0.03600	-0.02486
0.8000	0.02623	-0.02623	0.02860	-0.02153
0.8500	0.02053	-0.02053	0.02064	-0.01786
0.9000	0.01448	-0.01448	0.01260	-0.01374
0.9250	0.01132	-0.01132	0.00899	-0.01144
0.9500	0.00807	-0.00807	0.00598	-0.00888
0.9750	0.00472	-0.00472	0.00392	-0.00603
0.9900	0.00265	-0.00265	0.00322	-0.00421
1.0000	0.00126	-0.00126	0.00299	-0.00300
	$r_o/c = 0.0158$		$r_o/c = 0.012$	

TABLE 2.- AIRFOIL COORDINATES: WORTMANN FX-098 AND SIKORSKY SC-1095 AIRFOILS

x/c	WORTMANN FX-098, y/c		SIKORSKY SC-1095, y/c	
	upper	lower	upper	lower
0.0000	0.00000	0.00000	0.00000	0.00000
0.0005	0.00293	-0.00249	0.00307	-0.00257
0.0010	0.00426	-0.00343	0.00443	-0.00368
0.0020	0.00619	-0.00471	0.00640	-0.00535
0.0035	0.00837	-0.00609	0.00865	-0.00724
0.0050	0.01017	-0.00717	0.01054	-0.00880
0.0065	0.01175	-0.00807	0.01221	-0.01016
0.0080	0.01319	-0.00886	0.01374	-0.01138
0.0100	0.01494	-0.00978	0.01560	-0.01285
0.0125	0.01692	-0.01079	0.01771	-0.01450
0.0160	0.01944	-0.01202	0.02041	-0.01657
0.0200	0.02204	-0.01321	0.02320	-0.01865
0.0250	0.02501	-0.01451	0.02635	-0.02092
0.0350	0.03021	-0.01664	0.03140	-0.02454
0.0500	0.03681	-0.01913	0.03677	-0.02842
0.0650	0.04234	-0.02111	0.04070	-0.03108
0.0800	0.04705	-0.02277	0.04374	-0.03295
0.1000	0.05222	-0.02464	0.04680	-0.03464
0.1250	0.05714	-0.02658	0.04963	-0.03619
0.1500	0.06073	-0.02819	0.05174	-0.03739
0.2000	0.06491	-0.03059	0.05447	-0.03884
0.2500	0.06650	-0.03198	0.05548	-0.03933
0.3000	0.06630	-0.03251	0.05524	-0.03918
0.3500	0.06515	-0.03242	0.05437	-0.03858
0.4000	0.06336	-0.03184	0.05299	-0.03760
0.4500	0.06097	-0.03096	0.05105	-0.03622
0.5000	0.05798	-0.02982	0.04854	-0.03446
0.5500	0.05445	-0.02843	0.04555	-0.03234
0.6000	0.05040	-0.02678	0.04212	-0.02985
0.6500	0.04586	-0.02487	0.03819	-0.02702
0.7000	0.04085	-0.02273	0.03375	-0.02384
0.7500	0.03543	-0.02034	0.02887	-0.02034
0.8000	0.02962	-0.01768	0.02362	-0.01658
0.8500	0.02337	-0.01473	0.01808	-0.01265
0.9000	0.01642	-0.01134	0.01235	-0.00865
0.9250	0.01253	-0.00932	0.00943	-0.00664
0.9500	0.00856	-0.00702	0.00642	-0.00454
0.9750	0.00476	-0.00423	0.00328	-0.00233
0.9900	0.00255	-0.00237	0.00132	-0.00093
1.0000	0.00110	-0.00110	0.00000	0.00000
	$r_o/c = 0.007$		$r_o/c = 0.008$	

TABLE 3.- AIRFOIL COORDINATES: HUGHES HH-02 (-5° TAB) AND VERTOL VR-7 (-3° TAB) AIRFOILS

x/c	HUGHES HH-02, y/c		VERTOL VR-7, y/c	
	upper	lower	upper	lower
0.0000	0.00000	0.00000	0.00000	0.00000
0.0005	0.00283	-0.00284	0.00337	-0.00330
0.0010	0.00405	-0.00388	0.00483	-0.00460
0.0020	0.00594	-0.00532	0.00696	-0.00633
0.0035	0.00819	-0.00683	0.00943	-0.00800
0.0050	0.01009	-0.00800	0.01149	-0.00919
0.0065	0.01176	-0.00895	0.01330	-0.01010
0.0080	0.01327	-0.00978	0.01494	-0.01086
0.0100	0.01510	-0.01072	0.01695	-0.01172
0.0125	0.01717	-0.01172	0.01923	-0.01263
0.0160	0.01975	-0.01290	0.02213	-0.01367
0.0200	0.02237	-0.01404	0.02512	-0.01467
0.0250	0.02531	-0.01524	0.02846	-0.01575
0.0350	0.03029	-0.01714	0.03423	-0.01751
0.0500	0.03640	-0.01943	0.04144	-0.01966
0.0650	0.04137	-0.02127	0.04759	-0.02154
0.0800	0.04553	-0.02276	0.05299	-0.02320
0.1000	0.05012	-0.02432	0.05922	-0.02516
0.1250	0.05468	-0.02575	0.06565	-0.02709
0.1500	0.05828	-0.02675	0.07091	-0.02855
0.2000	0.06328	-0.02793	0.07887	-0.03055
0.2500	0.06608	-0.02843	0.08378	-0.03186
0.3000	0.06738	-0.02834	0.08592	-0.03273
0.3500	0.06750	-0.02755	0.08574	-0.03308
0.4000	0.06640	-0.02600	0.08365	-0.03271
0.4500	0.06391	-0.02377	0.07984	-0.03148
0.5000	0.06008	-0.02104	0.07451	-0.02952
0.5500	0.05504	-0.01797	0.06781	-0.02712
0.6000	0.04891	-0.01482	0.05996	-0.02464
0.6500	0.04174	-0.01176	0.05171	-0.02207
0.7000	0.03344	-0.00952	0.04322	-0.01929
0.7500	0.02403	-0.00851	0.03442	-0.01639
0.8000	0.01436	-0.00889	0.02527	-0.01346
0.8500	0.00481	-0.00984	0.01575	-0.01050
0.9000	-0.00431	-0.01041	0.00558	-0.00744
0.9250	-0.00394	-0.00777	0.00117	-0.00609
0.9500	-0.00203	-0.00583	-0.00016	-0.00512
0.9750	-0.00006	-0.00387	0.00115	-0.00380
0.9900	0.00112	-0.00269	0.00194	-0.00300
1.0000	0.00190	-0.00190	0.00247	-0.00247
	$r_o/c = 0.008$		$r_o/c = 0.011$	

TABLE 4.- AIRFOIL COORDINATES: NLR-1 AND NLR-7301 AIRFOILS

x/c	NLR-1, y/c		NLR-7301, y/c	
	upper	lower	upper	lower
0.0000	0.00000	0.00000	0.00000	0.00000
0.0005	0.00359	-0.00288	0.00730	-0.00748
0.0010	0.00499	-0.00388	0.01051	-0.01020
0.0020	0.00687	-0.00518	0.01518	-0.01373
0.0035	0.00890	-0.00643	0.02030	-0.01735
0.0050	0.01053	-0.00730	0.02424	-0.02016
0.0065	0.01194	-0.00799	0.02756	-0.02252
0.0080	0.01321	-0.00858	0.03043	-0.02455
0.0100	0.01475	-0.00929	0.03375	-0.02688
0.0125	0.01648	-0.01006	0.03729	-0.02935
0.0160	0.01868	-0.01101	0.04140	-0.03225
0.0200	0.02097	-0.01196	0.04514	-0.03502
0.0250	0.02358	-0.01301	0.04873	-0.03794
0.0350	0.02799	-0.01477	0.05372	-0.04264
0.0500	0.03328	-0.01688	0.05920	-0.04806
0.0650	0.03750	-0.01859	0.06321	-0.05229
0.0800	0.04093	-0.02007	0.06636	-0.05576
0.1000	0.04435	-0.02179	0.06985	-0.05962
0.1250	0.04701	-0.02363	0.07347	-0.06358
0.1500	0.04905	-0.02522	0.07648	-0.06689
0.2000	0.05200	-0.02775	0.08115	-0.07194
0.2500	0.05386	-0.02958	0.08441	-0.07527
0.3000	0.05489	-0.03082	0.08649	-0.07713
0.3500	0.05528	-0.03154	0.08755	-0.07763
0.4000	0.05511	-0.03185	0.08764	-0.07672
0.4500	0.05443	-0.03176	0.08678	-0.07412
0.5000	0.05327	-0.03126	0.08495	-0.06934
0.5500	0.05164	-0.03025	0.08206	-0.06237
0.6000	0.04948	-0.02882	0.07789	-0.05386
0.6500	0.04677	-0.02707	0.07212	-0.04397
0.7000	0.04348	-0.02503	0.06458	-0.03316
0.7500	0.03892	-0.02276	0.05551	-0.02227
0.8000	0.03172	-0.02028	0.04523	-0.01221
0.8500	0.02368	-0.01756	0.03415	-0.00409
0.9000	0.01562	-0.01427	0.02269	0.00108
0.9250	0.01179	-0.01199	0.01696	0.00228
0.9500	0.00811	-0.00903	0.01129	0.00246
0.9750	0.00454	-0.00511	0.00577	0.00153
0.9900	0.00244	-0.00253	0.00258	0.00042
1.0000	0.00103	-0.00103	0.00055	-0.00055
	$r_o/c = 0.007$		$r_o/c = 0.055$	

TABLE 5.- TRANSDUCER LOCATIONS ON THE AIRFOILS

Transducer Number ^a	Nominal ^b x/c		Actual pressure transducer location							
	Pressure	Hot wire	0012	A-01	FX-098	SC-1095	VR-7	NLR-1	NLR-7301	HH-02
1 LE	0.		0.	0.	0.0002U	0.	0.	0.	0.0015U	0.
2 U	.005 (.004)		.0060	.0054	.0038	.0040	.0044	.0054	.0101	.0050
3	.010 (.010)		.0103	.010	.0067	.0110	.0083	.0108	.0165	.0087
4	.025 (.030)	0.025 (.025)	.0242	.024	.0196	.0275	.0225	.028	.0335	.0326
5	.050 (.06)		.052	.050	.051	.053	.050	.051	.0512	.0581
6	.100 (.12)	.10 (.12)	.102	.100	.101	.1025	.100	.101	.102	.1167
7	.175 (.18)		.176	.175	.177	.178	.175	.177	.177	.183
8	.25 (.25)		.252	.250	.252	.252	.250	.250	.252	.250
9	.325 (.32)		.326	.325	.326	.325	.325	.325	.326	.317
10	.40 (.38)	.40 (.38)	.40	.40	.40	.40	.40	.40	.40	.383
11	.50 (.48)		.50	.50	.50	.50	.50	.50	.50	.472
12	.60 (.56)	.60 (.56)	.60	.60	.60	.60	.60	.60	.60	.561
13	.70 (.65)		.70	.70	.70	.70	.70	.70	.70	.650
14	.80 (.74)	.80 (.74)	.80	.80	.80	.80	.80	.80	.80	.739
15	.90 (.84)		.899	.90	.90	.90	.90	.90	.90	.840
16 U	.98 (.93)		.98	.98	.98	.98	.98	.98	.98	.925
17 L	.98 (.93)		.979	.98	.98	.98	.98	.98	.98	.925
18	.90 (.84)		.90	.90	.90	.90	.90	.90	.90	.840
19	.70 (.65)		.70	.70	.70	.70	.70	.70	.70	.650
20	.50 (.48)		.50	.50	.50	.50	.50	.50	.50	.472
21	.30 (.29)		.30	.30	.30	.30	.30	.30	.30	.294
22	.15 (.16)		.153	.150	.153	.150	.150	.150	.155	.161
23	.05 (.072)		.0504	.050	.051	.052	.050	.051	.0517	.0730
24	.025 (.030)		.023	.026	.027	.028	.0246	.0220	.0194	.0293
25	.010 (.010)		.0093	.0130	.0125	.009	.0094	.0108	.0051	.0081
26 L	.005 (.004)		.0049	.0073	.0061	.005	.0040	.0062	.0021	.0044

^aLE = leading edge; U = upper surface; L = lower surface.

^bLocations for HH-02, for which c = 68.6 cm, are shown in parentheses; for all other airfoils shown, c = 61.0 cm.

TABLE 6.- LIST OF DATA FRAMES

A	FRAME	TRIP	TYPE	A0	A1	G	H	RE	K	FREQ	B	FRAME	TRIP	TYPE	A0	A1	G	H	RE	K	FREQ	B	FRAME	TRIP	TYPE	A0	A1	G	H	RE	K	FREQ		
4010	N	ST	-2	0	0	875	301	3957803	0.0000	0.00	4020	7101	N	US	9	5	878	301	3909814	1.99	8.10	7102	7101	N	US	9	5	878	301	3909814	1.99	8.10		
4019	N	ST	-2	0	0	877	301	3932537	0.0000	0.00	4103	7104	N	US	8	5	878	301	3901834	0.249	1.35													
4109	N	ST	0	0	0	877	302	3923848	0.0000	0.00	4103	7105	N	US	8	5	878	301	3902954	0.950	5.40													
4111	N	ST	4	0	0	877	302	3910221	0.0000	0.00	4110	7111	N	US	8	5	877	301	3902957	0.950	5.40													
4113	N	ST	4	0	0	875	299	3931136	0.0000	0.00	4114	7112	N	US	10	5	877	301	3902957	0.950	5.40													
4119	N	ST	10	0	0	877	302	3932335	0.0000	0.00	4113	7113	N	US	10	5	877	301	3902957	0.950	5.40													
4223	N	ST	12	0	0	877	302	3957522	0.0000	0.00	4230	7114	N	US	10	5	877	301	3902957	0.950	5.40													
4225	N	ST	13	0	0	877	302	3957522	0.0000	0.00	4230	7115	N	US	11	5	873	301	3902957	0.950	5.40													
4203	N	ST	13	0	0	879	301	3957522	0.0000	0.00	4204	7119	N	US	11	5	877	301	3902957	0.950	5.40													
4209	N	ST	14	0	0	877	302	3957522	0.0000	0.00	4212	7120	N	US	11	5	877	301	3902957	0.950	5.40													
4213	N	ST	15	0	0	879	302	3957522	0.0000	0.00	4214	7121	N	US	11	5	877	301	3902957	0.950	5.40													
4215	N	ST	15	0	0	877	302	3957522	0.0000	0.00	4216	7200	N	US	12	5	878	301	3902957	0.950	5.40													
4217	N	ST	16	0	0	879	299	3957522	0.0000	0.00	4218	7201	N	US	12	5	877	301	3902957	0.950	5.40													
4219	N	ST	17	8	0	875	299	3957522	0.0000	0.00	4220	7202	N	US	12	5	877	301	3902957	0.950	5.40													
4301	N	ST	20	0	0	875	299	3957522	0.0000	0.00	4302	7203	N	US	12	5	877	301	3902957	0.950	5.40													
4301	N	ST	20	0	0	875	299	3957522	0.0000	0.00	4302	7204	N	US	12	5	877	301	3902957	0.950	5.40													
4303	N	ST	12	0	0	877	302	3957522	0.0000	0.00	4304	7300	N	US	10	5	877	301	3902957	0.950	5.40													
4305	N	ST	13	0	0	877	302	3957522	0.0000	0.00	4306	7301	N	US	10	5	877	301	3902957	0.950	5.40													
4307	N	ST	14	0	0	877	302	3957522	0.0000	0.00	4308	7302	N	US	10	5	877	301	3902957	0.950	5.40													
4309	N	ST	15	0	0	877	302	3957522	0.0000	0.00	4310	7303	N	US	10	5	877	301	3902957	0.950	5.40													
4311	N	ST	16	0	0	877	302	3957522	0.0000	0.00	4312	7304	N	US	10	5	877	301	3902957	0.950	5.40													
4313	N	ST	17	8	0	875	299	3957522	0.0000	0.00	4314	7305	N	US	10	5	877	301	3902957	0.950	5.40													
4315	N	ST	18	0	0	875	299	3957522	0.0000	0.00	4316	7306	N	US	10	5	877	301	3902957	0.950	5.40													
4317	N	ST	19	0	0	875	299	3957522	0.0000	0.00	4318	7307	N	US	10	5	877	301	3902957	0.950	5.40													
4319	N	ST	20	0	0	875	299	3957522	0.0000	0.00	4320	7308	N	US	10	5	877	301	3902957	0.950	5.40													
4321	N	ST	21	0	0	875	299	3957522	0.0000	0.00	4322	7309	N	US	10	5	877	301	3902957	0.950	5.40													
4323	N	ST	22	0	0	875	299	3957522	0.0000	0.00	4324	7310	N	US	10	5	877	301	3902957	0.950	5.40													
4325	N	ST	23	0	0	875	299	3957522	0.0000	0.00	4326	7311	N	US	10	5	877	301	3902957	0.950	5.40													
4327	N	ST	24	0	0	875	299	3957522	0.0000	0.00	4328	7312	N	US	10	5	877	301	3902957	0.950	5.40													
4329	N	ST	25	0	0	875	299	3957522	0.0000	0.00	4330	7313	N	US	10	5	877	301	3902957	0.950	5.40													
4331	N	ST	26	0	0	875	299	3957522	0.0000	0.00	4332	7314	N	US	10	5	877	301	3902957	0.950	5.40													
4333	N	ST	27	0	0	875	299	3957522	0.0000	0.00	4334	7315	N	US	10	5	877	301	3902957	0.950	5.40													
4335	N	ST	28	0	0	875	299	3957522	0.0000	0.00	4336	7316	N	US	10	5	877	301	3902957	0.950	5.40													
4337	N	ST	29	0	0	875	299	3957522	0.0000	0.00	4338	7317	N	US	10	5	877	301	3902957	0.950	5.40													
4339	N	ST	30	0	0	875	299	3957522	0.0000	0.00	4340	7318	N	US	10	5	877	301	3902957	0.950	5.40													
4341	N	ST	31	0	0	875	299	3957522	0.0000	0.00	4342	7319	N	US	10	5	877	301	3902957	0.950	5.40													
4343	N	ST	32	0	0	875	299	3957522	0.0000	0.00	4344	7320	N	US	10	5	877	301	3902957	0.950	5.40													
4345	N	ST	33	0	0	875	299	3957522	0.0000	0.00	4346	7321	N	US	10	5	877	301	3902957	0.950	5.40													
4347	N	ST	34	0	0	875	299	3957522	0.0000	0.00	4348	7322	N	US	10	5	877	301	3902957	0.950	5.40													
4349	N	ST	35	0	0	875	299	3957522	0.0000	0.00	4350	7323	N	US	10	5	877	301	3902957	0.950	5.40													
4351	N	ST	36	0	0	875	299	3957522	0.0000	0.00	4352	7324	N	US	10	5	877	301	3902957	0.950	5.40													
4353	N	ST	37	0	0	875	299	3957522	0.0000	0.00	4354	7325	N	US	10	5	877	301	3902957	0.950	5.40													
4355	N	ST	38	0	0	875	299	3957522	0.0000	0.00	4356	7326	N	US	10	5	877	301	3902957	0.950	5.40													
4357	N	ST	39	0	0	875	299	3957522	0.0000	0.00	4358	7327	N	US	10	5	877	301	3902957	0.950	5.40													
4359	N	ST	40	0	0	875	299	3957522	0.0000	0.00	4360	7328	N	US	10	5	877	301	3902957	0.950	5.40													
4361	N	ST	41	0	0	875	299	3957522	0.0000	0.00	4362	7329	N	US	10	5	877	301	3902957	0.950	5.40													
4363	N	ST	42	0	0	875	299	3957522	0.0000	0.00	4364	7330	N	US	10	5	877	301	3902957	0.950	5.40													
4365	N	ST	43	0	0	875	299	3957522	0.0000	0.00	4366	7331	N	US	10	5	877	301	3902957	0.950	5.40													
4367	N	ST	44	0	0	875	299	3957522	0.0000	0.00	4368	7332	N	US	10	5	877	301	3902957	0.950	5.40													
4369	N	ST	45	0	0	875	299	3957522	0.0000	0.00	4370	7333	N	US	10	5	877	301	3902957	0.950	5.40													
4371	N	ST	46	0	0	875	299	3957522	0.0000	0.00	4372	7334	N	US	10	5	877	301	3902957	0.950	5.40													
4373	N	ST	47	0	0	875	299	3957522	0.0000	0.00	4374	7335	N	US	10	5	877	301	3902957	0.950	5.40													
4375	N	ST	48	0	0	875	299	3957522	0.0000	0.00	4376	7336																						

TABLE 6.- Continued.
(a) Concluded.

A	FRAME	TRIP	TYPE	AO	A1	Q	N	RE	K	FREQ	B
											FRAME
10105	N	US	12.0	8.0	8.0	.878	.302	3694271.	.0568	5.35	12023
10108	N	US	12.0	8.0	.847	.294	3635589.	1.253	6.81	5.36	12105
10113	N	US	15.0	5.0	.876	.402	3806345.	.0098	1.53	5.36	12112
10114	N	US	15.0	5.0	.841	.295	3591337.	.0252	1.34	5.36	12121
10118	N	US	15.0	5.0	.823	.291	3749526.	.1020	5.36	5.36	12121
10120	N	US	15.0	5.0	.847	.294	3785165.	.1511	8.04	5.36	12121
10123	N	US	15.0	5.0	.832	.293	3758528.	.2024	10.72	5.36	12121
10202	N	US	10.0	5.0	.877	.301	3658103.	.0098	5.36	5.36	12121
10203	N	US	10.0	5.0	.877	.301	3647451.	.0246	1.34	5.36	12121
10204	N	US	10.0	5.0	.870	.300	3924514.	.0493	2.68	5.36	12121
10207	N	US	10.0	5.0	.877	.302	3524529.	.0740	4.02	5.36	12121
10208	N	US	10.0	5.0	.870	.303	3554785.	.0990	5.36	5.36	12121
10211	N	US	10.0	5.0	.870	.300	3663353.	.1486	8.04	5.36	12121
10212	N	US	10.0	5.0	.870	.300	3650737.	.1979	10.72	5.36	12121
10218	N	US	5.0	5.0	.880	.300	3933484.	.0098	5.36	5.36	12121
10221	N	US	5.0	5.0	.878	.301	3925387.	.0993	5.36	5.36	12121
10222	N	US	5.0	5.0	.878	.301	3912114.	.1963	10.72	5.36	12121
10303	N	US	5.0	10.0	.877	.301	3910580.	.0991	5.36	5.36	12121
10305	N	US	5.0	10.0	.877	.301	3911328.	.0991	5.36	5.36	12121
10309	N	US	2.0	10.0	.877	.301	3846261.	.0989	5.36	5.36	12121
12020	N	US	20.0	10.0	.718	.270	349C309.	.0010	.05	5.36	12023
12102	N	US	5.0	10.0	.682	.302	3920000.	.0009	.05	5.36	12105
12109	N	US	5.0	10.0	.756	.279	3465765.	.0010	.05	5.36	12112
12118	N	US	20.0	10.0	.676	.262	3249704.	.0010	.05	5.36	12121
12203	N	US	20.0	10.0	.531	.231	2587477.	.0011	.05	5.36	12121
12208	N	US	7.0	10.0	.587	.244	3269975.	.0010	.05	5.36	12121
12300	N	US	20.0	10.0	.421	.204	2706734.	.0011	.04	5.36	12301
12305	N	US	20.0	10.0	.292	.169	2252844.	.0011	.03	5.36	12306
12310	N	US	7.0	10.0	.350	.186	2459266.	.0010	.03	5.36	13104
13021	N	US	7.0	10.0	.120	.108	1592757.	.0017	.03	5.36	13108
13107	N	US	20.0	10.0	.113	.105	1421201.	.0017	.03	5.36	13116
13115	N	US	20.0	10.0	.048	.068	915163.	.0027	.03	5.36	13202
13120	N	US	5.0	10.0	.053	.072	962303.	.0025	.02	5.36	13213
13205	N	US	5.0	10.0	.014	.036	488772.	.0026	.02	5.36	13213
13217	N	US	20.0	10.0	.013	.036	465631.	.0010	.05	5.36	13104
13222	N	US	20.0	10.0	.749	.276	3656957.	.0010	.05	5.36	13108
13303	N	US	7.0	10.0	.603	.247	3298109.	.0010	.05	5.36	13116
13308	N	US	7.0	10.0	.461	.215	2884310.	.0010	.04	5.36	13202
13310	N	US	7.0	10.0	.466	.216	2884723.	.0010	.04	5.36	13213
13313	Y	US	7.0	10.0	.332	.181	2402990.	.0010	.03	5.36	13316
13321	Y	US	7.0	10.0	.639	.294	374C354.	.0009	.05	5.36	13405
14019	Y	US	15.0	10.0	.339	.183	2453290.	.0499	1.65	5.36	14020
14021	Y	US	15.0	10.0	.336	.182	2434182.	.1001	3.30	5.36	14022
14023	Y	US	15.0	10.0	.335	.182	2426579.	.1504	4.95	5.36	14100
14104	Y	US	15.0	10.0	.338	.183	2443651.	.0499	1.65	5.36	14105
14106	Y	US	15.0	10.0	.340	.184	2449389.	.0994	3.30	5.36	14107
14108	Y	US	15.0	10.0	.339	.183	2443079.	.1493	4.95	5.36	14109
14117	Y	US	15.0	10.0	.837	.293	3843264.	.0257	1.34	5.36	14118
14119	Y	US	15.0	10.0	.836	.293	3815432.	.0509	2.68	5.36	14120
14200	Y	US	15.0	10.0	.643	.294	3822179.	.0253	1.34	5.36	14201
14202	Y	US	15.0	10.0	.839	.293	3792702.	.0506	2.68	5.36	14203
14208	Y	US	15.0	10.0	.828	.291	3764396.	.1019	5.36	5.36	14209
14210	Y	US	15.0	10.0	.832	.292	3760353.	.1014	5.36	5.36	14211
14218	N	US	15.0	10.0	.830	.292	3762748.	.0254	1.34	5.36	14211
14219	N	US	15.0	10.0	.824	.291	3735990.	.0509	2.68	5.36	14221
14220	N	US	15.0	10.0	.805	.287	3683317.	.1031	5.36	5.36	14221
15218	N	US	15.0	10.0	.818	.290	3678973.	.0994	5.24	5.36	14221
10117	N	US	15.0	5.0	.843	.295	3802553.	.0504	2.68	5.36	7201
7202	N	US	12.0	5.0	.877	.302	3861104.	.0496	2.70	5.36	7201
7222	N	US	10.0	5.0	.876	.298	3975490.	.0509	2.70	5.36	7223

TABLE 6. - Continued.
(b) Ames A-01 airfoil.

A										B									
FRAME	TRIP	TYPE	AQ	A1	Q	M	RE	K	FREQ	FRAME	TRIP	TYPE	AQ	A1	Q	M	RE	K	FREQ
26020	N	ST	-5.0	0.0	880	301	3921512	0.0000	0.00	26021	N	ST	20.0	0.0	342	184	2418525	0.0000	0.00
26022	N	ST	-2.0	0.0	881	302	3907918	0.0000	0.00	27307	N	ST	16.0	0.0	342	184	2422139	0.0000	0.00
26023	N	ST	0.0	0.0	882	302	3900668	0.0000	0.00	27308	N	ST	14.0	0.0	342	184	2422443	0.0000	0.00
26101	N	ST	2.0	0.0	878	302	3978703	0.0000	0.00	27309	N	ST	11.0	0.0	343	185	2422621	0.0000	0.00
26107	N	ST	4.0	0.0	879	302	3939303	0.0000	0.00	27310	N	ST	8.0	0.0	341	184	2422433	0.0000	0.00
26108	N	ST	6.0	0.0	880	302	3939303	0.0000	0.00	27311	N	ST	5.0	0.0	339	184	2422433	0.0000	0.00
26109	N	ST	8.0	0.0	880	302	3939303	0.0000	0.00	27318	N	ST	0.0	0.0	342	184	2422433	0.0000	0.00
26112	N	ST	10.0	0.0	884	302	3939303	0.0000	0.00	27319	N	ST	0.0	0.0	342	184	2422433	0.0000	0.00
26114	N	ST	12.0	0.0	884	302	3939303	0.0000	0.00	27400	N	ST	-5.0	0.0	123	109	1535531	0.0000	0.00
26122	N	ST	13.0	0.0	857	298	3737465	0.0000	0.00	27401	N	ST	-2.0	0.0	123	110	1550354	0.0000	0.00
26200	N	ST	13.5	0.0	833	293	3667954	0.0000	0.00	27403	N	ST	0.0	0.0	121	109	1533751	0.0000	0.00
26205	N	ST	14.0	0.0	857	298	3720572	0.0000	0.00	27405	N	ST	2.0	0.0	122	109	1535687	0.0000	0.00
26207	N	ST	15.0	0.0	870	302	3754105	0.0000	0.00	27406	N	ST	4.0	0.0	122	109	1535687	0.0000	0.00
26209	N	ST	16.0	0.0	870	302	3754105	0.0000	0.00	27413	N	ST	6.0	0.0	122	110	1527397	0.0000	0.00
26215	N	ST	17.0	0.0	815	290	3589892	0.0000	0.00	27414	N	ST	8.0	0.0	122	109	1527397	0.0000	0.00
26216	N	ST	18.0	0.0	815	290	3589892	0.0000	0.00	27415	N	ST	10.0	0.0	121	109	1527397	0.0000	0.00
26218	N	ST	20.0	0.0	778	282	3497091	0.0000	0.00	27416	N	ST	12.0	0.0	121	109	1527397	0.0000	0.00
26219	N	ST	20.0	0.0	778	282	3497091	0.0000	0.00	28019	N	ST	13.0	0.0	121	109	1527397	0.0000	0.00
26220	N	ST	25.0	0.0	946	252	3129086	0.0000	0.00	28020	N	ST	15.0	0.0	121	109	1527397	0.0000	0.00
26300	N	ST	16.0	0.0	832	293	3594634	0.0000	0.00	28021	N	ST	15.0	0.0	122	114	1451556	0.0000	0.00
26301	N	ST	14.0	0.0	878	293	3594634	0.0000	0.00	28022	N	ST	15.0	0.0	122	114	1451556	0.0000	0.00
26302	N	ST	13.0	0.0	858	293	3590546	0.0000	0.00	28100	N	ST	16.0	0.0	129	110	1529077	0.0000	0.00
26302	N	ST	11.0	0.0	879	302	3643121	0.0000	0.00	28101	N	ST	18.0	0.0	124	110	1483052	0.0000	0.00
26306	N	ST	5.0	0.0	883	303	3706075	0.0000	0.00	28109	N	ST	20.0	0.0	124	109	1479403	0.0000	0.00
26307	N	ST	5.0	0.0	883	303	3706075	0.0000	0.00	28110	N	ST	20.0	0.0	124	109	1479403	0.0000	0.00
26313	N	ST	5.0	0.0	878	302	3693264	0.0000	0.00	28115	N	ST	20.0	0.0	124	109	1479403	0.0000	0.00
26315	N	ST	-2.0	0.0	612	250	3113134	0.0000	0.00	28116	N	ST	14.0	0.0	122	109	1479403	0.0000	0.00
26318	N	ST	0.0	0.0	616	250	3113134	0.0000	0.00	28117	N	ST	13.0	0.0	123	110	1474187	0.0000	0.00
26320	N	ST	2.0	0.0	614	249	31132011	0.0000	0.00	28118	N	ST	11.0	0.0	131	109	1474187	0.0000	0.00
26321	N	ST	4.0	0.0	612	249	31132011	0.0000	0.00	28119	N	ST	9.0	0.0	131	109	1474187	0.0000	0.00
26414	N	ST	8.0	0.0	618	250	3112889	0.0000	0.00	28200	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
26415	N	ST	10.0	0.0	612	249	3371063	0.0000	0.00	28201	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
26417	N	ST	12.0	0.0	614	249	3334503	0.0000	0.00	28202	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
26419	N	ST	13.0	0.0	621	251	3344961	0.0000	0.00	28203	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
26421	N	ST	14.0	0.0	615	249	3344961	0.0000	0.00	28204	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
26422	N	ST	15.0	0.0	615	249	3344961	0.0000	0.00	28205	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27020	N	ST	15.0	0.0	617	250	3308153	0.0000	0.00	28206	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27022	N	ST	16.0	0.0	616	250	3293220	0.0000	0.00	28207	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27101	N	ST	18.0	0.0	618	250	3281426	0.0000	0.00	28208	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27102	N	ST	20.0	0.0	618	250	3281426	0.0000	0.00	28209	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27103	N	ST	25.0	0.0	613	249	3255106	0.0000	0.00	28210	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27108	N	ST	20.0	0.0	630	252	3304196	0.0000	0.00	28211	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27109	N	ST	16.0	0.0	615	249	3255565	0.0000	0.00	28212	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27110	N	ST	14.0	0.0	617	250	3265185	0.0000	0.00	28213	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27111	N	ST	13.0	0.0	611	249	3248047	0.0000	0.00	28214	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27116	N	ST	11.0	0.0	612	249	3246751	0.0000	0.00	28215	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27117	N	ST	5.0	0.0	607	248	3241861	0.0000	0.00	28216	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27118	N	ST	5.0	0.0	615	249	3258729	0.0000	0.00	28217	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27119	N	ST	5.0	0.0	614	248	3258729	0.0000	0.00	28218	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27123	N	ST	-5.0	0.0	343	185	2440864	0.0000	0.00	28219	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27201	N	ST	-2.0	0.0	343	184	2440864	0.0000	0.00	28220	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27202	N	ST	0.0	0.0	340	184	2436687	0.0000	0.00	28221	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27204	N	ST	2.0	0.0	343	184	2436687	0.0000	0.00	28222	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27205	N	ST	4.0	0.0	343	185	2460290	0.0000	0.00	28223	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27211	N	ST	8.0	0.0	347	185	2460290	0.0000	0.00	28224	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27212	N	ST	10.0	0.0	344	185	2460290	0.0000	0.00	28225	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27214	N	ST	12.0	0.0	345	185	2441417	0.0000	0.00	28226	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27216	N	ST	13.0	0.0	342	184	2429710	0.0000	0.00	28227	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27218	N	ST	14.0	0.0	340	184	2418565	0.0000	0.00	28228	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27220	N	ST	14.9	0.0	347	186	2445054	0.0000	0.00	28229	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27301	N	ST	16.0	0.0	344	185	2445054	0.0000	0.00	28230	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27303	N	ST	18.0	0.0	343	184	2445054	0.0000	0.00	28231	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27304	N	ST	20.0	0.0	343	184	2445054	0.0000	0.00	28232	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00
27306	N	ST	25.0	0.0	342	184	2445054	0.0000	0.00	28233	N	ST	14.5	0.0	121	108	1459453	0.0000	0.00

TABLE 6.- Continued.

(b) Concluded.

A	FRAME	TRIP	TYPE	AJ	Q	M	RE	K	FREQ	FRAME	B
25102	N	US	10.0	10.0	881	302	3831527	0489	2.68	25103	
25104	N	US	10.0	10.0	880	302	3816708	0978	5.36	25108	
25109	N	US	10.0	10.0	879	302	3810775	1468	8.04	25110	
25117	N	US	10.0	5.0	884	303	3829075	0242	1.34		
25118	N	US	10.0	5.0	879	302	3803407	0489	2.68		
25119	N	US	10.0	5.0	883	303	3805390	0975	5.36		
25121	N	US	10.0	5.0	881	302	3813088	1465	8.04		
25122	N	US	10.0	5.0	884	303	3819823	1462	8.04		
25123	N	US	10.0	5.0	885	303	3815827	1947	10.72		
25123	Y	US	15.0	10.0	820	291	3637799	0248	1.31	29100	
29101	Y	US	15.0	10.0	805	298	3634654	0500	2.62	29102	
29106	Y	US	15.0	10.0	806	298	3646183	1001	5.24	29107	
29115	Y	US	15.0	10.0	340	194	2418131	0494	1.65	29116	
29117	Y	US	15.0	10.0	341	194	2418248	0987	3.30	29118	
29119	Y	US	15.0	10.0	341	184	2417060	1481	4.95	29121	
29205	N	US	5.0	10.0	876	301	3947215	0098	5.3	29206	
29207	N	US	5.0	10.0	877	301	3918856	0446	2.68	29210	
29211	N	US	5.0	10.0	877	301	3902857	0901	5.36	29212	
29213	N	US	5.0	10.0	879	301	3816095	1483	8.04	29214	
29215	N	US	5.0	10.0	879	301	3891313	1481	8.04		
29223	N	US	13.5	2.0	876	301	3911977	1965	10.72	29300	
29304	N	US	14.5	2.0	870	300	3772473	1967	10.72	29306	
29309	N	US	14.5	2.0	852	296	3722411	1986	10.72	29310	
29317	N	US	15.0	10.0	013	035	472349	1021	65	29318	
30019	N	US	15.0	10.0	865	298	3856941	0097	5.2	30021	
30020	N	US	15.0	10.0	864	298	3828146	0096	5.2	30021	
30105	N	US	10.0	10.0	880	301	3844592	0097	5.3	30106	
30110	N	US	10.0	5.0	877	301	3217844	0097	5.3	30111	
30119	N	US	10.0	5.0	874	300	3612552	0097	5.3	30120	
30201	N	US	11.0	5.0	877	301	3812196	0099	5.4	30202	
30206	N	US	14.0	2.0	876	301	3812450	0037	5.3	30208	
30215	N	US	7.5	10.0	338	183	2415733	0099	3.3	30216	
31102	N	US	10.0	10.0	877	302	3680208	0247	1.34	31103	
31104	N	US	10.0	10.0	878	302	3654857	0492	2.68	31105	
31110	N	US	10.0	10.0	880	302	3841535	1471	8.04	31111	
31112	N	US	10.0	10.0	860	302	3832051	1469	8.04	31111	
31119	N	US	5.0	10.0	884	303	3850266	1245	1.34	31120	
31121	N	US	5.0	10.0	880	302	3826484	0489	2.68	31122	
31123	N	US	5.0	10.0	884	303	3823741	0975	5.36	31200	
31201	N	US	5.0	10.0	883	303	3816623	1463	8.04	31202	
31209	N	US	15.0	10.0	341	194	2421425	0987	3.30	31210	
31215	N	US	7.5	10.0	341	184	2425489	0494	1.65	31216	
31217	N	US	7.5	10.0	341	185	2423083	1972	6.60	31218	
31302	N	US	14.5	2.0	852	297	3765532	1990	10.72	31304	
31310	N	US	14.5	2.0	854	298	3731489	1485	8.04	31312	
25204	N	US	15.0	5.0	877	301	3973275	0249	1.34		
25205	N	US	15.0	5.0	878	301	3952662	0437	2.68		
25208	N	US	15.0	5.0	878	301	3950602	0994	5.36		
25209	N	US	15.0	5.0	857	298	3697213	1506	8.04		
25210	N	US	15.0	5.0	852	297	3865306	2013	10.72		
25214	N	US	11.0	5.0	880	302	3724436	0455	2.68	25215	
25216	N	US	11.0	5.0	883	302	3409711	0486	5.36	25217	
25301	N	US	5.0	5.0	884	302	3403998	0984	5.36	25302	
25303	N	US	5.0	5.0	865	303	3878688	1962	10.72	25304	
25311	N	US	5.0	10.1	881	302	3852707	0982	5.36	25312	
25319	N	US	5.5	10.0	881	302	3833693	0980	5.36	25320	

TABLE 6.- Continued.
(c) Wortmann FX-098 airfoil.

A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P		Q		R		S		T		U		V		W		X		Y		Z		AA		AB		AC		AD		AE		AF		AG		AH		AI		AJ		AK		AL		AM		AN		AO		AP		AQ		AR		AS		AT		AU		AV		AW		AX		AY		AZ		BA		BB		BC		BD		BE		BF		BG		BH		BI		BJ		BK		BL		BM		BN		BO		BP		BQ		BR		BS		BT		BU		BV		BW		BX		BY		BZ		CA		CB		CC		CD		CE		CF		CG		CH		CI		CJ		CK		CL		CM		CN		CO		CP		CQ		CR		CS		CT		CU		CV		CW		CX		CY		CZ		DA		DB		DC		DD		DE		DF		DG		DH		DI		DJ		DK		DL		DM		DN		DO		DP		DQ		DR		DS		DT		DU		DV		DW		DX		DY		DZ		EA		EB		EC		ED		EE		EF		EG		EH		EI		EJ		EK		EL		EM		EN		EO		EP		EQ		ER		ES		ET		EU		EV		EW		EX		EY		EZ		FA		FB		FC		FD		FE		FF		FG		FH		FI		FJ		FK		FL		FM		FN		FO		FP		FQ		FR		FS		FT		FU		FV		FW		FX		FY		FZ		GA		GB		GC		GD		GE		GF		GG		GH		GI		GJ		GK		GL		GM		GN		GO		GP		GQ		GR		GS		GT		GU		GV		GW		GX		GY		GZ		HA		HB		HC		HD		HE		HF		HG		HH		HI		HJ		HK		HL		HM		HN		HO		HP		HQ		HR		HS		HT		HU		HV		HW		HX		HY		HZ		IA		IB		IC		ID		IE		IF		IG		IH		II		IJ		IK		IL		IM		IN		IO		IP		IQ		IR		IS		IT		IU		IV		IW		IX		IY		IZ		JA		JB		JC		JD		JE		JF		JG		JH		JI		JJ		JK		JL		JM		JN		JO		JP		JQ		JR		JS		JT		JU		JV		JW		JX		JY		JZ		KA		KB		KC		KD		KE		KF		KG		KH		KI		KJ		KK		KL		KM		KN		KO		KP		KQ		KR		KS		KT		KU		KV		KW		KX		KY		KZ		LA		LB		LC		LD		LE		LF		LG		LH		LI		LJ		LK		LL		LM		LN		LO		LP		LQ		LR		LS		LT		LU		LV		LW		LX		LY		LZ		MA		MB		MC		MD		ME		MF		MG		MH		MI		MJ		MK		ML		MM		MN		MO		MP		MQ		MR		MS		MT		MU		MV		MW		MX		MY		MZ		NA		NB		NC		ND		NE		NF		NG		NH		NI		NJ		NK		NL		NM		NO		NP		NQ		NR		NS		NT		NU		NV		NW		NX		NY		NZ		OA		OB		OC		OD		OE		OF		OG		OH		OI		OJ		OK		OL		OM		ON		OO		OP		OQ		OR		OS		OT		OU		OV		OW		OX		OY		OZ		PA		PB		PC		PD		PE		PF		PG		PH		PI		PJ		PK		PL		PM		PN		PO		PP		PQ		PR		PS		PT		PU		PV		PW		PX		PY		PZ		QA		QB		QC		QD		QE		QF		QG		QH		QI		QJ		QK		QL		QM		QN		QO		QP		QQ		QR		QS		QT		QU		QV		QW		QX		QY		QZ		RA		RB		RC		RD		RE		RF		RG		RH		RI		RJ		RK		RL		RM		RN		RO		RP		RQ		RR		RS		RT		RU		RV		RW		RX		RY		RZ		SA		SB		SC		SD		SE		SF		SG		SH		SI		SJ		SK		SL		SM		SN		SO		SP		SQ		SR		SS		ST		SU		SV		SW		SX		SY		SZ		TA		TB		TC		TD		TE		TF		TG		TH		TI		TJ		TK		TL		TM		TN		TO		TP		TQ		TR		TS		TT		TU		TV		TW		TX		TY		TZ		UA		UB		UC		UD		UE		UF		UG		UH		UI		UJ		UK		UL		UM		UN		UO		UP		UQ		UR		US		UT		UU		UV		UW		UX		UY		UZ		VA		VB		VC		VD		VE		VF		VG		VH		VI		VJ		VK		VL		VM		VN		VO		VP		VQ		VR		VS		VT		VU		VV		VW		VX		VY		VZ		WA		WB		WC		WD		WE		WF		WG		WH		WI		WJ		WK		WL		WM		WN		WO		WP		WQ		WR		WS		WT		WU		WV		WW		WX		WY		WZ		XA		XB		XC		XD		XE		XF		XG		XH		XI		XJ		XK		XL		XM		XN		XO		XP		XQ		XR		XS		XT		XU		XV		XW		XX		XY		XZ		YA		YB		YC		YD		YE		YF		YG		YH		YI		YJ		YK		YL		YM		YN		YO		YP		YQ		YR		YS		YT		YU		YV		YW		YX		YY		YZ		ZA		ZB		ZC		ZD		ZE		ZF		ZG		ZH		ZI		ZJ		ZK		ZL		ZM		ZN		ZO		ZP		ZQ		ZR		ZS		ZT		ZU		ZV		ZW		ZX		ZY		ZZ	
17208	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17209	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17210	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17211	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17212	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17213	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17214	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17215	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17216	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17217	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17218	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17219	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17220	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17221	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17222	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17223	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17224	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17225	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17226	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17227	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17228	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17229	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17230	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17231	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17232	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17233	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17234	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17235	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17236	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17237	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17238	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17239	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17240	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17241	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17242	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17243	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17244	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17245	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17246	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17247	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17248	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17249	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17250	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17251	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17252	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17253	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17254	Y	Y	ST	5.0	0.0	880	301	3928557	0.0000	0.00	17255	Y	Y	ST	5.0	0.0	880	301	3928557																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

TABLE 6. - Continued.

(c) Concluded.

A								B			
FRAME	TRIP	TYPE	AO	A1	Q	M	RE	K	FREQ	FRAME	
17200	N	UN	15.0	10.0	.814	.290	3702477.	.0999	5.24	17201	
21100	N	UN	15.0	10.0	.823	.291	3718613.	.0098	.52	21102	
21107	N	UN	10.0	10.0	.867	.299	3792469.	.0098	.53	21201	
21200	N	UN	10.0	5.0	.875	.301	3932117.	.0098	.53	21209	
21208	N	UN	3.3	10.0	.882	.302	3295549.	.0097	.53	21200	
21219	N	UN	6.5	10.0	.339	.184	2455359.	.0098	.33	22100	
22023	N	UN	15.0	10.0	.627	.293	3727583.	.0247	1.31	22104	
22103	N	UN	15.0	10.0	.837	.294	3749090.	.0492	2.62	22202	
22201	N	UN	15.0	10.0	.785	.285	3554419.	.1008	5.24	22207	
22206	N	UN	15.0	10.0	.754	.279	3477029.	.1542	7.86	22209	
22208	N	UN	15.0	10.0	.763	.281	3483672.	.0969	4.98		
22216	N	UN	10.0	10.0	.875	.302	3732111.	.0243	1.34		
22217	N	UN	10.0	10.0	.875	.302	3702666.	.0495	2.68		
22218	N	UN	10.0	10.0	.862	.300	3694571.	.0977	5.36		
22219	N	UN	10.0	10.0	.835	.294	3618509.	.1490	8.04		
22307	N	UN	10.0	5.0	.875	.301	3954287.	.0246	1.34	22273	
22309	N	UN	10.0	5.0	.880	.303	3857324.	.0491	2.68	22301	
22309	N	UN	10.0	5.0	.881	.303	3853461.	.0980	5.36	22302	
22311	N	UN	10.0	5.0	.877	.302	3840798.	.1475	8.04	22303	
22312	N	UN	10.0	5.0	.882	.303	3839072.	.1957	10.72		
23021	N	UN	15.0	5.0	.858	.298	3792196.	.0248	1.34		
23022	N	UN	15.0	5.0	.851	.297	3750472.	.0497	2.68		
23023	N	UN	15.0	5.0	.840	.295	3716391.	.1000	5.36		
23100	N	UN	15.0	5.0	.822	.292	3670134.	.1515	8.04		
23107	N	UN	5.0	5.0	.867	.300	3802326.	.0989	5.36	23109	
23109	N	UN	5.0	5.0	.847	.300	3783174.	.1970	10.72	23110	
23117	N	UN	5.0	10.0	.869	.300	3803440.	.0985	5.36	23118	
23201	N	UN	3.8	10.0	.866	.299	3948210.	.1003	5.36	23202	
23206	N	UN	3.3	10.0	.866	.299	3924045.	.0500	2.68	23207	
23208	N	UN	3.3	10.0	.871	.300	3914485.	.0996	5.36	23210	
23211	N	UN	3.3	10.0	.870	.300	3895319.	.1492	8.04	23212	
23219	N	UN	12.0	2.0	.854	.299	3855609.	.1994	10.72	23220	
23205	N	UN	14.0	2.0	.858	.298	3831711.	.1995	10.72	23306	
23310	N	UN	15.0	2.0	.839	.294	3768762.	.2014	10.72	23311	
21112	N	UN	15.0	5.0	.873	.301	3940131.	.0099	.53		
23101	N	UN	15.0	5.0	.800	.287	3617353.	.2049	10.72		

(d) Sikorsky SC-1095 airfoil.

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TABLE 6.- Continued.

(d) Concluded.

A					B				
FRAME	TRIP	TYPE	AO	A1	Q	M	RE	K	FREQ
39110	N	UN	11.0	5.0	.869	.299	3896587.	.0099	.53
39115	N	UN	14.0	2.0	.865	.298	3838622.	.0100	.54
38110	N	UN	16.0	2.0	.832	.293	3754517.	.2023	10.72
39107	N	UN	10.0	5.0	.876	.300	3939495.	.0098	.53
									FRAME
									38111

(e) Hughes HH-02 airfoil.

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TABLE 6.- Continued.

(e) Concluded.

(C7) Cont'd.											
A	FRAME	TRIP	TYPE	AO	A1	Q	H	RE	K	FREQ	B FRAME
44112	N	US	10.0	5.0	.880	.303	4003278.	.1989	10.72	44113	
44118	N	US	10.0	5.0	.880	.302	4037890.	.0999	5.36		
44119	N	US	10.0	5.0	.876	.302	4019097.	.0250	1.34		
44120	N	US	10.0	5.0	.878	.302	4007236.	.1997	10.72		
44202	N	US	14.0	2.0	.875	.301	4004232.	.1001	5.36	44203	
44204	N	US	14.0	2.0	.872	.301	3987136.	.2002	10.72	44205	
44209	N	US	17.5	2.0	.773	.282	3756572.	.2132	10.72		
44212	N	US	15.5	2.0	.854	.297	3951107.	.0102	.54		
44214	N	US	15.5	2.0	.851	.297	3917470.	.0253	1.34		
44215	N	US	15.5	2.0	.849	.296	3904494.	.0506	2.68		
44216	N	US	15.5	2.0	.829	.293	3854681.	.1024	5.36		
44217	N	US	15.5	2.0	.830	.291	3826794.	.1545	8.04		
44218	N	US	15.5	2.0	.824	.292	3772243.	.2054	10.72		
44221	N	US	12.5	2.0	.871	.301	3955505.	.0101	.54		
44222	N	US	12.5	2.0	.877	.302	3923321.	.0248	1.34		
44223	N	US	12.5	2.0	.871	.301	3926010.	.0493	2.68		
44300	N	US	12.5	2.0	.874	.301	3924775.	.0794	5.36		
44303	N	US	12.5	2.0	.877	.302	3952217.	.1490	8.04		
44304	N	US	12.5	2.0	.878	.302	3945318.	.1984	10.72		
43308	N	US	15.0	5.0	.813	.290	3609287.	.1549	8.04		

TABLE 6.- Continued.

(f) Vertol VR-7 airfoil.

A	FRAME	TRIP	TYPE	AO	A1	G	M	RE	K	FREQ	B	FRAME	TRIP	TYPE	AO	A1	G	M	RE	K	FREQ	B	FRAME
46018	N	ST	-5.0	0.0	.121	108	1551001.	0.0000	0.00	0.00	4609	N	ST	13.0	0.0	876	299	4071175.	0.0000	0.00	0.00	46609	
46019	N	ST	5.0	0.0	.123	108	1546271.	0.0000	0.00	0.00	4610	N	ST	12.0	0.0	872	299	4055190.	0.0000	0.00	0.00	46610	
46020	N	ST	10.0	0.0	.118	107	1557517.	0.0000	0.00	0.00	4611	N	ST	0.0	0.0	881	300	4054711.	0.0000	0.00	0.00	46621	
46101	N	ST	10.0	0.0	.119	107	1512690.	0.0000	0.00	0.00	4612	N	ST	0.0	0.0	340	183	2522757.	0.0000	0.00	0.00	46622	
46102	N	ST	12.0	0.0	.122	109	1540066.	0.0000	0.00	0.00	4613	N	ST	5.0	0.0	340	183	2514978.	0.0000	0.00	0.00	46700	
46103	N	ST	12.5	0.0	.123	109	1547844.	0.0000	0.00	0.00	4614	N	ST	10.0	0.0	340	183	2513421.	0.0000	0.00	0.00	46702	
46104	N	ST	13.0	0.0	.123	109	1543789.	0.0000	0.00	0.00	4615	N	ST	12.0	0.0	341	183	2515138.	0.0000	0.00	0.00	46704	
46105	N	ST	13.5	0.0	.123	109	1542255.	0.0000	0.00	0.00	4616	N	ST	13.0	0.0	340	183	2516104.	0.0000	0.00	0.00	46706	
46106	N	ST	14.0	0.0	.122	109	1537872.	0.0000	0.00	0.00	4617	N	ST	14.0	0.0	338	182	2501582.	0.0000	0.00	0.00	46708	
46107	N	ST	15.0	0.0	.122	109	1537932.	0.0000	0.00	0.00	4618	N	ST	15.0	0.0	340	183	2518275.	0.0000	0.00	0.00	46708	
46108	N	ST	17.0	0.0	.123	109	1541148.	0.0000	0.00	0.00	4619	N	ST	16.0	0.0	341	184	2516975.	0.0000	0.00	0.00	46713	
46109	N	ST	20.0	0.0	.122	109	1534206.	0.0000	0.00	0.00	4620	N	ST	20.0	0.0	343	184	2517610.	0.0000	0.00	0.00	46719	
46110	N	ST	25.0	0.0	.120	108	1523001.	0.0000	0.00	0.00	4621	N	ST	0.0	0.0	342	183	2519323.	0.0000	0.00	0.00	46719	
46111	N	ST	-5.0	0.0	.341	184	2552698.	0.0000	0.00	0.00	4622	N	ST	0.0	0.0	881	300	4204772.	0.0000	0.00	0.00	46803	
46112	N	ST	5.0	0.0	.342	183	2552698.	0.0000	0.00	0.00	4623	N	ST	5.0	0.0	881	300	4185103.	0.0000	0.00	0.00	46805	
46113	N	ST	10.0	0.0	.343	184	2562110.	0.0000	0.00	0.00	4624	N	ST	10.0	0.0	882	301	4170536.	0.0000	0.00	0.00	46807	
46203	N	ST	10.0	0.0	.343	184	2562110.	0.0000	0.00	0.00	4625	N	ST	12.0	0.0	883	301	4145130.	0.0000	0.00	0.00	46809	
46205	N	ST	12.0	0.0	.341	183	2552698.	0.0000	0.00	0.00	4626	N	ST	13.0	0.0	881	300	4139718.	0.0000	0.00	0.00	46811	
46207	N	ST	12.5	0.0	.342	183	2552698.	0.0000	0.00	0.00	4627	N	ST	14.0	0.0	881	300	4137342.	0.0000	0.00	0.00	46816	
46209	N	ST	13.0	0.0	.342	184	2552698.	0.0000	0.00	0.00	4628	N	ST	15.0	0.0	877	299	4105230.	0.0000	0.00	0.00	46818	
46211	N	ST	13.5	0.0	.341	183	2552698.	0.0000	0.00	0.00	4629	N	ST	16.0	0.0	877	299	4091352.	0.0000	0.00	0.00	46820	
46212	N	ST	14.0	0.0	.342	183	2552698.	0.0000	0.00	0.00	4630	N	ST	20.0	0.0	876	287	3613204.	0.0000	0.00	0.00	46822	
46213	N	ST	15.0	0.0	.341	183	2552698.	0.0000	0.00	0.00	4631	N	ST	0.0	0.0	881	300	4085157.	0.0000	0.00	0.00	46830	
46214	N	ST	15.0	0.0	.340	183	2630320.	0.0000	0.00	0.00	4632	N	ST	5.0	0.0	873	300	4062142.	0.0000	0.00	0.00	46830	
46215	N	ST	17.0	0.0	.340	183	2624424.	0.0000	0.00	0.00	4633	N	ST	15.0	0.0	873	300	4062142.	0.0000	0.00	0.00	46830	
46221	N	ST	20.0	0.0	.340	183	2624424.	0.0000	0.00	0.00	4634	N	ST	15.0	0.0	873	300	4062142.	0.0000	0.00	0.00	46830	
46223	N	ST	20.0	0.0	.340	183	2622591.	0.0000	0.00	0.00	4635	N	ST	15.0	0.0	873	300	4062142.	0.0000	0.00	0.00	46830	
46301	N	ST	25.0	0.0	.340	183	2614559.	0.0000	0.00	0.00	4636	N	ST	15.0	0.0	873	300	4062142.	0.0000	0.00	0.00	46830	
46302	N	ST	-2.0	0.0	.612	248	34762182.	0.0000	0.00	0.00	4637	N	ST	10.0	0.0	873	301	4033486.	0.0000	0.00	0.00	46830	
46303	N	ST	10.0	0.0	.613	249	3476509.	0.0000	0.00	0.00	4638	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46304	N	ST	10.0	0.0	.612	248	3465501.	0.0000	0.00	0.00	4639	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46305	N	ST	10.0	0.0	.611	248	3465501.	0.0000	0.00	0.00	4640	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46310	N	ST	5.0	0.0	.614	248	3462655.	0.0000	0.00	0.00	4641	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46311	N	ST	8.0	0.0	.615	249	3476948.	0.0000	0.00	0.00	4642	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46318	N	ST	10.0	0.0	.611	248	3435015.	0.0000	0.00	0.00	4643	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46319	N	ST	12.0	0.0	.613	248	3433344.	0.0000	0.00	0.00	4644	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46320	N	ST	12.5	0.0	.615	249	3429325.	0.0000	0.00	0.00	4645	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46321	N	ST	13.0	0.0	.612	248	3429325.	0.0000	0.00	0.00	4646	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46322	N	ST	13.5	0.0	.610	249	3429325.	0.0000	0.00	0.00	4647	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46323	N	ST	14.0	0.0	.613	249	3417715.	0.0000	0.00	0.00	4648	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46400	N	ST	15.0	0.0	.613	249	3413349.	0.0000	0.00	0.00	4649	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46403	N	ST	17.0	0.0	.616	249	3427697.	0.0000	0.00	0.00	4650	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46404	N	ST	20.0	0.0	.615	249	3412222.	0.0000	0.00	0.00	4651	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46405	N	ST	25.0	0.0	.614	248	3396768.	0.0000	0.00	0.00	4652	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46406	N	ST	13.0	0.0	.610	248	3398737.	0.0000	0.00	0.00	4653	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46407	N	ST	12.0	0.0	.613	249	3391342.	0.0000	0.00	0.00	4654	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46412	N	ST	0.0	0.0	.614	249	3391265.	0.0000	0.00	0.00	4655	N	ST	10.0	0.0	875	301	4033486.	0.0000	0.00	0.00	46830	
46418	N	ST	-5.0	0.0	.877	300	3986471.	0.0000	0.00	0.00	4656	N	ST	-2.0	0.0	878	300	3986471.	0.0000	0.00	0.00	46830	
46420	N	ST	2.0	0.0	.875	300	3965594.	0.0000	0.00	0.00	4657	N	ST	2.0	0.0	878	300	3965594.	0.0000	0.00	0.00	46830	
46423	N	ST	2.0	0.0	.878	300	3965594.	0.0000	0.00	0.00	4658	N	ST	2.0	0.0	878	300	3965594.	0.0000	0.00	0.00	46830	
46500	N	ST	8.0	0.0	.873	300	39655978.	0.0000	0.00	0.00	4659	N	ST	8.0	0.0	878	300	39655978.	0.0000	0.00	0.00	46830	
46508	N	ST	10.0	0.0	.873	300	4112633.	0.0000	0.00	0.00	4660	N	ST	10.0	0.0	878	300	4112633.	0.0000	0.00	0.00	46830	
46509	N	ST	12.0	0.0	.876	299	4119351.	0.0000	0.00	0.00	4661	N	ST	12.0	0.0								

TABLE 6.- Continued.

(f) Concluded.

A	FRAME	TRIP	TYPE	AO	A1	Q	M	RE	K	FREQ	B	FRAME
54216	N	UN	15.0	10.0	10.0	340	184	2547606.	.1514	4.95	8	54217
48019	N	UN	4.1	10.0	8.74	.299	300	4215503.	.0103	5.54		48020
48023	N	UN	4.1	10.0	.880	.300	4189965.	.0255	1.34	4.91		48100
48101	N	UN	4.1	10.0	.877	.299	4160141.	.0509	2.65	4.81		48102
48103	N	UN	4.1	10.0	.879	.300	4154411.	.1016	5.36	4.81		48104
48116	N	UN	13.0	2.0	.878	.299	4054862.	.0253	1.34	4.81		48117
48118	N	UN	13.0	2.0	.878	.299	4057323.	.0504	2.68	4.81		48119
48122	N	UN	13.0	2.0	.876	.299	4057706.	.1010	5.35	4.81		48123
48209	N	UN	16.0	2.0	.870	.298	4059728.	.2028	10.72	4.82		48211
48215	N	UN	14.0	2.0	.877	.300	4057579.	.0504	2.68			
48216	N	UN	14.0	2.0	.879	.300	4047826.	.1005	5.36			
48217	N	UN	14.0	2.0	.879	.300	4035620.	.2039	10.72	4.92		48218
48300	N	UN	12.5	2.0	.878	.300	4033369.	.0101	1.54			
48301	N	UN	12.5	2.0	.878	.300	4011900.	.0251	1.34			
48302	N	UN	12.5	2.0	.831	.301	4009055.	.0503	2.69			
48303	N	UN	12.5	2.0	.874	.299	3776169.	.1004	5.36			
48304	N	UN	12.5	2.0	.873	.299	3780450.	.1505	8.04			
48308	N	UN	12.5	2.0	.875	.300	3998448.	.2007	10.72	4.83		48309
49110	N	UN	15.0	10.0	.333	.184	2634248.	.0257	.83	4.91		49111
49117	N	UN	15.0	10.0	.342	.185	2619356.	.0507	1.65	4.91		49118
49120	N	UN	15.0	10.0	.340	.185	2599412.	.1014	3.30	4.91		49121
49203	N	UN	15.0	10.0	.341	.195	2532737.	.1518	4.95	4.92		49204
49206	N	UN	15.0	10.0	.341	.195	2534516.	.2020	6.60	4.92		49207
49216	N	UN	4.7	10.0	.340	.184	2550439.	.0254	.83	4.92		49217
49300	N	UN	4.7	10.0	.339	.184	2535555.	.1009	3.30	4.93		49301
49307	N	UN	4.7	10.0	.342	.185	2548693.	.2035	6.60	4.93		49308
49310	N	UN	4.7	10.0	.343	.185	2543519.	.2503	8.25	4.93		49311
49323	N	UN	15.0	10.0	.338	.184	2543127.	.0101	.33	4.91		49300
50116	N	UN	4.7	10.0	.339	.193	2531156.	.0101	.33	5.01		50117
50118	N	UN	15.0	10.0	.340	.184	2555187.	.1516	4.95	5.70		50119
55018	N	UN	15.0	10.0	.238	.183	2437793.	.1495	4.95	5.90		55019
58102	N	UN	15.0	10.0	.014	.037	495703.	.0983	.65	5.81		58103
58111	N	UN	15.0	10.0	.121	.109	1529745.	.1010	1.96	5.81		58112
58120	N	UN	15.0	10.0	.340	.184	2536174.	.1511	4.95			
58121	N	UN	15.0	10.0	.340	.184	2532230.	.1007	2.30			
47022	Y	UN	15.0	10.0	.841	.296	3990015.	.0501	2.62			47023
48200	N	UN	13.0	2.0	.884	.301	4062447.	.2036	10.72	4.82		48201

TABLE 6.- Continued.
(g) NLR-1 airfoil.

A	FRAME	TRIP	TYPE	AD	AI	Q	H	RE	K	FREQ	FRAME	B
61018	N	N	ST	5.0	0.0	122	109	1524150.	0.0000	0.00	64300	65102
61019	N	N	ST	5.0	0.0	123	110	1534313.	0.0000	0.00	64301	65104
61020	N	N	ST	5.0	0.0	124	111	1529490.	0.0000	0.00	64302	65108
61021	N	N	ST	5.0	0.0	125	112	1537127.	0.0000	0.00	64303	65111
61022	N	N	ST	5.0	0.0	126	113	1517792.	0.0000	0.00	64304	65114
61023	N	N	ST	5.0	0.0	127	114	1517792.	0.0000	0.00	64305	65102
61024	N	N	ST	5.0	0.0	128	115	1522421.	0.0000	0.00	64306	65104
61025	N	N	ST	5.0	0.0	129	116	1517658.	0.0000	0.00	64307	65108
61026	N	N	ST	5.0	0.0	130	117	1511515.	0.0000	0.00	64308	65111
61027	N	N	ST	5.0	0.0	131	118	1511515.	0.0000	0.00	64309	65114
61028	N	N	ST	5.0	0.0	132	119	1532495.	0.0000	0.00	64310	65102
61029	N	N	ST	5.0	0.0	133	120	1502433.	0.0000	0.00	64311	65104
61030	N	N	ST	5.0	0.0	134	121	1502433.	0.0000	0.00	64312	65108
61031	N	N	ST	5.0	0.0	135	122	2465730.	0.0000	0.00	64313	65111
61032	N	N	ST	5.0	0.0	136	123	2465730.	0.0000	0.00	64314	65114
61033	N	N	ST	5.0	0.0	137	124	2465730.	0.0000	0.00	64315	65102
61034	N	N	ST	5.0	0.0	138	125	2465730.	0.0000	0.00	64316	65104
61035	N	N	ST	5.0	0.0	139	126	2465730.	0.0000	0.00	64317	65108
61036	N	N	ST	5.0	0.0	140	127	2465730.	0.0000	0.00	64318	65111
61037	N	N	ST	5.0	0.0	141	128	2465730.	0.0000	0.00	64319	65114
61038	N	N	ST	5.0	0.0	142	129	2465730.	0.0000	0.00	64320	65102
61039	N	N	ST	5.0	0.0	143	130	2465730.	0.0000	0.00	64321	65104
61040	N	N	ST	5.0	0.0	144	131	2465730.	0.0000	0.00	64322	65108
61041	N	N	ST	5.0	0.0	145	132	2465730.	0.0000	0.00	64323	65111
61042	N	N	ST	5.0	0.0	146	133	2465730.	0.0000	0.00	64324	65114
61043	N	N	ST	5.0	0.0	147	134	2465730.	0.0000	0.00	64325	65102
61044	N	N	ST	5.0	0.0	148	135	2465730.	0.0000	0.00	64326	65104
61045	N	N	ST	5.0	0.0	149	136	2465730.	0.0000	0.00	64327	65108
61046	N	N	ST	5.0	0.0	150	137	2465730.	0.0000	0.00	64328	65111
61047	N	N	ST	5.0	0.0	151	138	2465730.	0.0000	0.00	64329	65114
61048	N	N	ST	5.0	0.0	152	139	2465730.	0.0000	0.00	64330	65102
61049	N	N	ST	5.0	0.0	153	140	2465730.	0.0000	0.00	64331	65104
61050	N	N	ST	5.0	0.0	154	141	2465730.	0.0000	0.00	64332	65108
61051	N	N	ST	5.0	0.0	155	142	2465730.	0.0000	0.00	64333	65111
61052	N	N	ST	5.0	0.0	156	143	2465730.	0.0000	0.00	64334	65114
61053	N	N	ST	5.0	0.0	157	144	2465730.	0.0000	0.00	64335	65102
61054	N	N	ST	5.0	0.0	158	145	2465730.	0.0000	0.00	64336	65104
61055	N	N	ST	5.0	0.0	159	146	2465730.	0.0000	0.00	64337	65108
61056	N	N	ST	5.0	0.0	160	147	2465730.	0.0000	0.00	64338	65111
61057	N	N	ST	5.0	0.0	161	148	2465730.	0.0000	0.00	64339	65114
61058	N	N	ST	5.0	0.0	162	149	2465730.	0.0000	0.00	64340	65102
61059	N	N	ST	5.0	0.0	163	150	2465730.	0.0000	0.00	64341	65104
61060	N	N	ST	5.0	0.0	164	151	2465730.	0.0000	0.00	64342	65108
61061	N	N	ST	5.0	0.0	165	152	2465730.	0.0000	0.00	64343	65111
61062	N	N	ST	5.0	0.0	166	153	2465730.	0.0000	0.00	64344	65114
61063	N	N	ST	5.0	0.0	167	154	2465730.	0.0000	0.00	64345	65102
61064	N	N	ST	5.0	0.0	168	155	2465730.	0.0000	0.00	64346	65104
61065	N	N	ST	5.0	0.0	169	156	2465730.	0.0000	0.00	64347	65108
61066	N	N	ST	5.0	0.0	170	157	2465730.	0.0000	0.00	64348	65111
61067	N	N	ST	5.0	0.0	171	158	2465730.	0.0000	0.00	64349	65114
61068	N	N	ST	5.0	0.0	172	159	2465730.	0.0000	0.00	64350	65102
61069	N	N	ST	5.0	0.0	173	160	2465730.	0.0000	0.00	64351	65104
61070	N	N	ST	5.0	0.0	174	161	2465730.	0.0000	0.00	64352	65108
61071	N	N	ST	5.0	0.0	175	162	2465730.	0.0000	0.00	64353	65111
61072	N	N	ST	5.0	0.0	176	163	2465730.	0.0000	0.00	64354	65114
61073	N	N	ST	5.0	0.0	177	164	2465730.	0.0000	0.00	64355	65102
61074	N	N	ST	5.0	0.0	178	165	2465730.	0.0000	0.00	64356	65104
61075	N	N	ST	5.0	0.0	179	166	2465730.	0.0000	0.00	64357	65108
61076	N	N	ST	5.0	0.0	180	167	2465730.	0.0000	0.00	64358	65111
61077	N	N	ST	5.0	0.0	181	168	2465730.	0.0000	0.00	64359	65114
61078	N	N	ST	5.0	0.0	182	169	2465730.	0.0000	0.00	64360	65102
61079	N	N	ST	5.0	0.0	183	170	2465730.	0.0000	0.00	64361	65104
61080	N	N	ST	5.0	0.0	184	171	2465730.	0.0000	0.00	64362	65108
61081	N	N	ST	5.0	0.0	185	172	2465730.	0.0000	0.00	64363	65111
61082	N	N	ST	5.0	0.0	186	173	2465730.	0.0000	0.00	64364	65114
61083	N	N	ST	5.0	0.0	187	174	2465730.	0.0000	0.00	64365	65102
61084	N	N	ST	5.0	0.0	188	175	2465730.	0.0000	0.00	64366	65104
61085	N	N	ST	5.0	0.0	189	176	2465730.	0.0000	0.00	64367	65108
61086	N	N	ST	5.0	0.0	190	177	2465730.	0.0000	0.00	64368	65111
61087	N	N	ST	5.0	0.0	191	178	2465730.	0.0000	0.00	64369	65114
61088	N	N	ST	5.0	0.0	192	179	2465730.	0.0000	0.00	64370	65102
61089	N	N	ST	5.0	0.0	193	180	2465730.	0.0000	0.00	64371	65104
61090	N	N	ST	5.0	0.0	194	181	2465730.	0.0000	0.00	64372	65108
61091	N	N	ST	5.0	0.0	195	182	2465730.	0.0000	0.00	64373	65111
61092	N	N	ST	5.0	0.0	196	183	2465730.	0.0000	0.00	64374	65114
61093	N	N	ST	5.0	0.0	197	184	2465730.	0.0000	0.00	64375	65102
61094	N	N	ST	5.0	0.0	198	185	2465730.	0.0000	0.00	64376	65104
61095	N	N	ST	5.0	0.0	199	186	2465730.	0.0000	0.00	64377	65108
61096	N	N	ST	5.0	0.0	200	187	2465730.	0.0000	0.00	64378	65111
61097	N	N	ST	5.0	0.0	201	188	2465730.	0.0000	0.00	64379	65114
61098	N	N	ST	5.0	0.0	202	189	2465730.	0.0000	0.00	64380	65102
61099	N	N	ST	5.0	0.0	203	190	2465730.	0.0000	0.00	64381	65104
61100	N	N	ST	5.0	0.0	204	191	2465730.	0.0000	0.00	64382	65108
61101	N	N	ST	5.0	0.0	205	192	2465730.	0.0000	0.00	64383	65111
61102	N	N	ST	5.0	0.0	206	193	2465730.	0.0000	0.00	64384	65114
61103	N	N	ST	5.0	0.0	207	194	2465730.	0.0000	0.00	64385	65102
61104	N	N	ST	5.0	0.0	208	195	2465730.	0.0000	0.00	64386	65104
61105	N	N	ST	5.0	0.0	209	196	2465730.	0.0000	0.00	64387	65108
61106	N	N	ST	5.0	0.0	210	197	2465730.	0.0000	0.00	64388	65111
61107	N	N	ST	5.0	0.0	211	198	2465730.	0.0000	0.00	64389	65114
61108	N	N	ST	5.0	0.0	212	199	2465730.	0.0000	0.00	64390	65102
61109	N	N	ST	5.0	0.0	213	200	2465730.	0.0000	0.00	64391	65104
61110	N	N	ST	5.0	0.0	214	201	2465730.	0.0000	0.00	64392	65108
61111	N	N	ST	5.0	0.0	215	202	2465730.	0.0000	0.00	64393	65111
61112	N	N	ST	5.0	0.0	216	203	2465730.	0.0000	0.00	64394	65114
61113	N	N	ST	5.0	0.0	217	204	2465730.	0.0000	0.00	64395	65102
61114	N	N	ST	5.0	0.0	218	205	2465730.	0.0000	0.00	64396	65104
61115	N	N	ST	5.0	0.0	219	206	2465730.	0.0000	0.00	64397	65108
61116	N	N	ST	5.0	0.0	220	207	2465730.	0.0000	0.00	64398	65111
61117	N	N	ST	5.0	0.0	221	208	2465730.	0.0000	0.00	64399	65114
61118	N	N	ST	5.0	0.0	222	209	2465730.	0.0000	0.00	64400	65102
61119	N	N	ST	5.0	0.0	223	210	2465730.	0.0000	0.00	64401	65104
61120	N	N	ST	5.0	0.0	224	211	2465730.	0.0000	0.00	64402	65108
61121	N	N	ST</									

TABLE 6.- Continued.

(g) Concluded.

A	FRAME	TRIP	TYPE	AO	A1	Q	M	SE	K	FREQ	B
63320	N	US	2.5	10.0	.878	.303	3739575.	.0969	5.36	63321	
63323	N	US	2.7	10.0	.880	.303	3746774.	.0969	5.36	63400	
64019	Y	US	15.0	10.0	.844	.296	3865490.	.0247	1.31	64020	
64021	Y	US	15.0	10.0	.840	.295	3813567.	.0493	2.62	64022	
64023	Y	US	15.0	10.0	.821	.292	3752005.	.0997	5.24	64100	
64107	Y	US	15.0	10.0	.840	.185	2448919.	.0496	1.65	64108	
64109	Y	US	15.0	10.0	.840	.184	2435010.	.0991	3.30	64110	
64111	Y	US	15.0	10.0	.841	.185	2439626.	.1281	4.95	64112	
64119	Y	US	2.5	10.0	.876	.302	3823417.	.0099	1.54	64120	
64121	Y	US	2.5	10.0	.875	.302	3755031.	.0244	1.34	64122	
64202	Y	US	2.5	10.0	.879	.303	3794515.	.0737	2.69	64203	
64204	Y	US	2.5	10.0	.878	.302	3774318.	.0974	5.36	64205	
64212	Y	US	-2.0	10.0	.877	.302	3717936.	.0098	1.54		
64213	Y	US	-2.0	10.0	.878	.303	3695424.	.0241	1.34		
64214	Y	US	-2.0	10.0	.878	.302	3685179.	.0482	2.68		
64215	Y	US	-2.0	10.0	.880	.303	3683703.	.0963	5.36		
65121	M	US	-2.0	10.0	.869	.300	3717371.	.0098	1.54		
65122	M	US	-2.0	10.0	.873	.301	3702335.	.0243	1.34		
65123	M	US	-2.0	10.0	.874	.301	3694993.	.0495	2.63		
65200	N	US	-2.0	10.0	.877	.302	3694943.	.0968	5.36		
65207	N	US	15.0	10.0	.895	.199	2641468.	.0937	3.57		
65209	N	US	15.0	10.0	.823	.292	3775170.	.1019	5.36		
65223	N	US	7.0	5.0	.121	.109	1475396.	.0249	3.92		
65300	N	US	7.0	5.0	.121	.109	1472656.	.1986	10.72		
65311	N	US	7.0	5.0	.879	.301	3862901.	.1969	10.72		
65309	N	US	7.0	5.0	.876	.301	3889117.	.0100	54		
63222	M	US	15.0	2.0	.818	.291	3675798.	.2028	10.72	63223	

TABLE 6.- Continued.

(h) NLR-7301.

A										B									
FRAME	TRIP	TYPE	AO	A1	G	H	RE	K	FREQ	FRAME	TRIP	TYPE	AO	A1	G	H	RE	K	FREQ
66019	N	ST	-5.0	0.0	.872	300	4003817	0.0000	0.00	66020	N	ST	20.0	0.0	.122	109	1517157	0.0000	0.00
66021	N	ST	-2.0	0.0	.876	300	3999020	0.0000	0.00	66023	N	ST	25.0	0.0	.122	109	1520439	0.0000	0.00
66022	N	ST	0.0	0.0	.874	301	3932026	0.0000	0.00		N	ST	17.0	0.0	.122	109	1519469	0.0000	0.00
66100	N	ST	2.0	0.0	.883	302	3999963	0.0000	0.00		N	ST	15.0	0.0	.121	108	1513500	0.0000	0.00
66109	N	ST	5.0	0.0	.891	301	3967824	0.0000	0.00		N	ST	13.0	0.0	.121	108	1513382	0.0000	0.00
66110	N	ST	8.0	0.0	.877	300	3982369	0.0000	0.00		N	ST	12.0	0.0	.122	109	1517732	0.0000	0.00
66112	N	ST	10.0	0.0	.876	300	3953075	0.0000	0.00		N	ST	11.5	0.0	.122	109	1517895	0.0000	0.00
66114	N	ST	12.0	0.0	.867	299	3933468	0.0000	0.00		N	ST	5.0	0.0	.121	109	1516191	0.0000	0.00
66116	N	ST	14.0	0.0	.772	291	3704250	0.0000	0.00		N	ST	0.0	0.0	.124	110	1523731	0.0000	0.00
66118	N	ST	16.0	0.0	.717	280	3654317	0.0000	0.00		N	ST	0.0	0.0	.337	183	2459560	0.0000	0.00
66120	N	ST	17.4	0.0	.701	267	3511002	0.0000	0.00		N	ST	0.0	0.0	.338	183	2453488	0.0000	0.00
66122	N	ST	18.3	0.0	.733	274	3555933	0.0000	0.00		N	ST	0.0	0.0	.338	183	2456240	0.0000	0.00
66200	N	ST	20.0	0.0	.737	274	3581274	0.0000	0.00		N	ST	0.0	0.0	.338	182	2456043	0.0000	0.00
66201	N	ST	17.0	0.0	.702	267	3495749	0.0000	0.00		N	ST	12.0	0.0	.338	182	2454170	0.0000	0.00
66209	N	ST	16.0	0.0	.709	269	3515104	0.0000	0.00		N	ST	15.5	0.0	.343	184	2472156	0.0000	0.00
66209	N	ST	5.0	0.0	.875	300	3932765	0.0000	0.00		N	ST	17.0	0.0	.337	183	2452276	0.0000	0.00
66214	N	ST	-5.0	0.0	.609	248	3923572	0.0000	0.00		N	ST	18.0	0.0	.338	183	2456445	0.0000	0.00
66215	N	ST	0.0	0.0	.610	248	3210711	0.0000	0.00		N	ST	20.0	0.0	.337	183	2453475	0.0000	0.00
66216	N	ST	5.0	0.0	.609	248	3274639	0.0000	0.00		N	ST	25.0	0.0	.337	183	2445074	0.0000	0.00
66221	N	ST	8.0	0.0	.608	248	3259675	0.0000	0.00		N	ST	14.7	0.0	.343	184	2444589	0.0000	0.00
66222	N	ST	10.0	0.0	.610	248	3271857	0.0000	0.00		N	ST	0.0	0.0	.339	183	2452952	0.0000	0.00
66223	N	ST	12.0	0.0	.606	247	3212436	0.0000	0.00		N	ST	0.0	0.0	.341	184	2456672	0.0000	0.00
66223	N	ST	14.0	0.0	.607	248	3251575	0.0000	0.00		N	ST	0.0	0.0	.341	184	2456672	0.0000	0.00
66301	N	ST	16.0	0.0	.608	247	3245641	0.0000	0.00		N	ST	0.0	0.0	.873	300	3923550	0.0000	0.00
66302	N	ST	17.2	0.0	.610	248	3223014	0.0000	0.00		N	ST	5.0	0.0	.873	300	3923419	0.0000	0.00
66303	N	ST	20.0	0.0	.612	249	3233333	0.0000	0.00		N	ST	8.0	0.0	.875	300	3922795	0.0000	0.00
66304	N	ST	25.0	0.0	.602	247	3234835	0.0000	0.00		N	ST	12.0	0.0	.845	292	3922415	0.0000	0.00
66305	N	ST	0.0	0.0	.602	247	3194450	0.0000	0.00		N	ST	13.0	0.0	.820	290	3765900	0.0000	0.00
66306	N	ST	5.0	0.0	.603	248	3213130	0.0000	0.00		N	ST	0.0	0.0	.874	300	3915017	0.0000	0.00
66307	N	ST	10.0	0.0	.612	249	3223516	0.0000	0.00		N	ST	0.0	0.0	.339	183	2439650	0.0000	0.00
66308	N	ST	12.0	0.0	.612	249	3223433	0.0000	0.00		N	ST	15.0	0.0	.340	184	2433341	0.0000	0.00
66313	N	ST	5.0	0.0	.608	248	3225536	0.0000	0.00		N	ST	15.0	0.0	.340	184	2432820	0.0000	0.00
66320	N	ST	-5.0	0.0	.605	247	3224951	0.0000	0.00		N	ST	10.0	0.0	.880	301	3709975	0.0000	0.00
66321	N	ST	0.0	0.0	.339	183	245188	0.0000	0.00		N	ST	5.0	0.0	.0245	1.24	67109	0.0000	0.00
66323	N	ST	5.0	0.0	.341	184	2463521	0.0000	0.00		N	ST	10.0	0.0	.0988	2.63	67111	0.0000	0.00
66323	N	ST	8.0	0.0	.339	183	2454083	0.0000	0.00		N	ST	10.0	0.0	.0992	2.63	67113	0.0000	0.00
66406	N	ST	10.0	0.0	.339	183	2457636	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67202	0.0000	0.00
66408	N	ST	12.0	0.0	.340	184	2457029	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67209	0.0000	0.00
66410	N	ST	14.0	0.0	.340	184	2457291	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67211	0.0000	0.00
66412	N	ST	16.0	0.0	.339	183	2457670	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67213	0.0000	0.00
66414	N	ST	17.4	0.0	.341	184	2457643	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67219	0.0000	0.00
66421	N	ST	20.0	0.0	.339	183	2455231	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66423	N	ST	25.0	0.0	.338	183	2447905	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66500	N	ST	17.0	0.0	.339	183	2450544	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66501	N	ST	14.0	0.0	.339	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66502	N	ST	15.0	0.0	.339	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66504	N	ST	13.0	0.0	.339	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66504	N	ST	12.0	0.0	.339	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66510	N	ST	5.0	0.0	.338	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66511	N	ST	0.0	0.0	.339	183	2453240	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66516	N	ST	-5.0	0.0	.121	108	1534072	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66517	N	ST	0.0	0.0	.122	109	1534577	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66518	N	ST	5.0	0.0	.121	109	1534255	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66520	N	ST	10.0	0.0	.122	109	1527646	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66521	N	ST	12.0	0.0	.120	109	1519094	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66522	N	ST	14.0	0.0	.120	109	1516730	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66523	N	ST	16.0	0.0	.121	108	1516123	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00
66604	N	ST	16.5	0.0	.121	109	1517915	0.0000	0.00		N	ST	10.0	0.0	.0992	1.96	67223	0.0000	0.00

TABLE 6.- Concluded.

(h) Concluded.

A	FRAME	TRIP	TYPE	A0	A1	Q	H	RE	K	B	FRQ	FRAME
69100	N	US	10.0	10.0	.873	.300	3918788.	.0249	1.34	69101	2.68	69103
69102	N	US	10.0	10.0	.876	.300	3900053.	.0496	5.36	69106	8.04	69108
69105	N	US	10.0	10.0	.877	.301	3904003.	.0991	1.34	69120	2.68	69122
69107	N	US	10.0	10.0	.876	.300	3824160.	.1484	5.36	69132	8.04	69134
69119	N	US	16.8	2.0	.727	.273	3492462.	.0270	1.34	69136	2.68	69138
69121	N	US	16.8	2.0	.710	.270	3437737.	.0546	5.36	69140	8.04	69142
69123	N	US	16.8	2.0	.700	.258	3266632.	.1100	10.72	69144	2.68	69146
69201	N	US	16.8	2.0	.692	.297	3366733.	.2203	5.36	69148	8.04	69150
69206	N	US	17.2	2.0	.734	.275	3455351.	.0268	1.34	69152	2.68	69154
69208	N	US	17.2	2.0	.745	.277	3464110.	.0530	5.36	69156	8.04	69158
69211	N	US	17.2	2.0	.709	.270	3370669.	.1086	10.72	69160	2.68	69162
69213	N	US	17.2	2.0	.719	.272	3397722.	.1616	5.36	69164	8.04	69166
69215	N	US	17.2	2.0	.755	.279	3459727.	.2098	10.72	69168	2.68	69170
69221	N	US	17.5	2.0	.726	.273	3447111.	.0536	1.34	69172	2.68	69174
69223	N	US	17.5	2.0	.634	.255	3226912.	.2255	5.36	69176	8.04	69178
69224	N	US	18.5	2.0	.689	.266	3255767.	.0549	10.72	69180	2.68	69182
69310	N	US	16.5	2.0	.671	.252	3218013.	.0554	5.36	69184	8.04	69186
70019	N	US	9.4	10.0	.341	.153	2344107.	.0245	1.34	70020	2.68	70022
70021	N	US	9.4	10.0	.340	.155	235519.	.0973	5.36	70024	8.04	70026
70023	N	US	9.4	10.0	.340	.185	235672.	.1948	10.72	70028	2.68	70030
70107	N	US	5.7	10.0	.675	.301	3916444.	.0104	1.34	70108	2.68	70110
70109	N	US	5.7	10.0	.676	.301	3876178.	.0247	5.36	70112	8.04	70114
70113	N	US	5.7	10.0	.672	.300	3851599.	.0495	10.72	70116	2.68	70118
70115	N	US	5.7	10.0	.675	.301	3854554.	.0936	5.36	70120	8.04	70122
70117	N	US	5.7	10.0	.674	.301	3943602.	.1479	10.72	70124	2.68	70126

TABLE 7.- LIST OF STATIC DATA

Airfoil ^a	M _∞	First frame	Last frame	No. of frames	α _{min}	α _{max}	Figure	Airfoil ^a	M _∞	First frame	Last frame	No. of frames	α _{min}	α _{max}	Figure
N-0012	0.30	04019	04412	24	-5.0	20.0		FX-098T	0.30	17208	17314	8	0.0	20.0	
	.30	11018	11309	33	-5.0	30.0	9, 12, 16	FX-098T	.18	18019	18206	10	0.0	20.0	
	.30	12102	(quasi-steady)		-5.0	15.0	16	SC-1095	.30	35021	35214	17	-5.0	16.0	19
	.28	12109			-4.0	16.0		SC-1095	.25	35220	35401	20	-5.0	25.0	
	.28	13222			10.1	29.9		SC-1095	.18	36019	36120	10	-5.0	20.0	
	.27	12020			10.1	29.9		SC-1095	.11	36202	36218	11	-5.0	20.0	
	.26	12118			10.1	29.9		SC-1095T	.30	34022	34115	8	0.0	16.0	
	.25	12208			-3.0	17.0		SC-1095T	.18	34200	34214	7	0.0	16.0	
	.25	13303			-3.0	17.0		HH-02	.30	40222	41103	20	-5.0	20.0	20
	.23	12203			10.1	29.9		HH-02	.25	41110	41215	20	-5.0	20.0	
	.22	13308			-3.0	17.0		HH-02	.18	40114	40215	10	-5.0	20.0	
	.22	13310			-3.0	17.0		HH-02	.11	40018	40108	11	-5.0	20.0	
	.20	12300			10.1	29.9		HH-02T	.30	41221	41314	8	0.0	16.0	
	.18	12310			-3.0	17.0		HH-02T	.18	41401	41419	10	0.0	16.0	
	.17	12305			10.1	29.9		VR-7	.30	46418	46615	18	-5.0	25.0	11, 21
	.11	13021			-3.0	17.0		VR-7	.25	46307	46412	19	-5.0	25.0	
	.11	13107			10.1	29.9		VR-7	.18	46116	46301	13	-5.0	25.0	
	.07	13120			-3.0	17.0		VR-7	.11	46018	46110	13	-5.0	25.0	
	.07	13115			10.1	29.9		VR-7T	.30	46802	46823	10	0.0	20.0	
	.04	13205			-5.0	15.0		VR-7T	.18	46621	46718	10	0.0	20.0	
	.04	13217			10.1	29.9		NLR-1	.30	61407	61606	19	-5.0	25.0	22
N-0012T	.29	13321			-3.0	17.0		NLR-1	.25	61221	61401	19	-5.0	25.0	
N-0012T	.18	13313			-3.0	17.0		NLR-1	.18	61114	61215	10	-5.0	20.0	
Ames-01	.30	26020	26307	23	-5.0	25.0	17	NLR-1	.11	61018	61108	11	-5.0	20.0	
Ames-01	.25	26313	27117	22	-5.0	25.0		NLR-1T	.30	65019	65115	13	-11.0	16.0	
Ames-01	.18	27123	27318	22	-5.0	25.0		NLR-1T	.18	64221	64311	8	0.0	16.0	
Ames-01	.11	27400	28120	21	-5.0	25.0		NLR-7301	.30	66019	66209	17	-5.0	20.0	23
Ames-01T	.30	28312	28410	9	0.0	16.0		NLR-7301	.25	66214	66314	17	-5.0	25.0	
Ames-01T	.19	28207	28304	10	0.0	20.0		NLR-7301	.18	66320	66511	18	-5.0	25.0	
FX-098	.30	20118	20322	21	-5.0	25.0	18	NLR-7301	.11	66516	66617	17	-5.0	25.0	
FX-098	.25	19314	20112	22	-5.0	25.0		NLR-7301T	.30	66810	66822	6	0.0	13.0	
FX-098	.18	19020	19308	23	-5.0	25.0		NLR-7301T	.18	66623	66802	13	0.0	25.0	
FX-098	.11	18215	18502	23	-5.0	25.0	10								

^aT = trip.

TABLE 8.- MACH NUMBER SWEEP AT $\alpha = 15^\circ + 10^\circ \sin \omega t$, $k = 0.10$

M_∞^α	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301
0.035	8102		16019			58102		
.07	8114	24323	16105	33022	42121	47123	62020	
.11	8214	24314	16114	33106	42321	{47206 58111	62104	67120
.18	8220	{24217 31209	16200	33110	42302	{47213 58121	62112	67220
.18T	{14021 14106	29117	17103	34321	42110	47112	64109	67021
.20							{62114 65207	
.22	9202	24209	16300	33205	42309	47217	62208	
.25	9203	24201	16308	33207	42313	47301	62210	67305
.28	9208	24117	22208	33215	42218	47305	62218	
.29	{9217 14220	24105	22201	33300	42210	45023	{62307 65209	
.29T	{14208 14210	29106	17200	34308	42100	47100	64023	

 α_T = trip.TABLE 9.- FREQUENCY SWEEP AT $M_\infty = 0.29$, $\alpha = 15^\circ + 10^\circ \sin \omega t$

k^α	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301
0.01	9210	{30019 30020	21100	38300				
.025	{9213 14218	24022	22023	33217	42206	45019	62302	
.025T	{14117 14200	29023	17117		42019	47020	64019	
.05	{9214 14219	24100	22103	33222	42208	45021	62304	
.05T	{14119 14202	29101	17119	34306	42021	47022	64021	
.10	{9217 14220	24105	22201	33300	42210	45023	62307 65209	
.10T	{14208 14210	29106	17200	34308	42100	47100	64023	
.15	9218	24109	22206	34409	{42212 42217	45101	62309	

 α_T = trip.

TABLE 10.- FREQUENCY SWEEP AT $M_\infty = 0.30$, $\alpha = 10^\circ + 10^\circ \sin \omega t$

k	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301
0.01	9221	30105	21107	38306	43019	45109	62317	69019
.025	9222	{25022 31102	22216	37023	43106	45111	62320	69100
.05	9223	{25102 31104	22217	37101	43108	45113	62322	69102
.10	9302	25104	22218	37107	43112	45117	62400	69105
.12							62403	
.15	9307	{25109 31110 31112	22219	37109	{43114 43117	45119	62405	69107

TABLE 11.- FREQUENCY SWEEP AT $M_\infty = 0.30$, $\alpha = 15^\circ + 5^\circ \sin \omega t$

k	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301
0.01	10113	30110	21112	39104		45203	63018	68019
.025	10114	25204	23021	38021	43303	45205	63019	68100
.05	10117	25205	23022	38022	43304	45207	63020	68102
.10	10118	25208	23023	38102	43305	45209	63021	68104
.12							63100	
.15	10120	25209	23100	38103	43308	45211	63101	68109
.20	10123	25210	23101	38104	43309	45213	63102	68111

TABLE 12.- FREQUENCY SWEEP AT $M_\infty = 0.30$, $\alpha = 10^\circ + 5^\circ \sin \omega t$

k	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301	NLR-7301T
0.01	10202	30119	21200	39107	44019			68119	
.025	{7112 10203	25117	22307	37207	{44021 44119	45221	63108	68121	67108
.05	{7222 10204	25118	22308	37208	44023	45223		68123	67110
.075	10207								
.10	{7113 10208	25119	22309	37210	{44104 44118	45300	63112	68201	67112
.15	{7300 10211	{25121 25122	22311	37213	44106	45302			
.20	{7114 10212	25123	22312	37215	{44112 44120	45303	63114	68203	

TABLE 13.- STALL ONSET AT $M_\infty = 0.30$, $\alpha = \alpha_0 + 10^\circ \sin \omega t$, $k = 0.10$

NACA 0012, $\alpha_0 = 3.8^\circ$	A-01, $\alpha_0 = 5.5^\circ$	FX-098, $\alpha_0 = 3.8^\circ$	SC-1095, $\alpha_0 = 4.4^\circ$	HH-02, $\alpha_0 = 4.0^\circ$	VR-7, $\alpha_0 = 4.6^\circ$	NLR-1, $\alpha_0 = 2.7^\circ$	NLR-7301, $\alpha_0 = 5.7^\circ$
10305	25319	23201	34418	43219	63323	70115	

TABLE 14.- STALL SUPPRESSION AT $M_\infty = 0.30$, $\alpha = \alpha_0 + 10^\circ \sin \omega t$

k	NACA 0012 $\alpha_0 = 5.0^\circ$	A-01, $\alpha_0 = 5.0^\circ$	FX-098, $\alpha_0 = 3.3^\circ$	SC-1095, $\alpha_0 = 4.1^\circ$	HH-02, $\alpha_0 = 3.8^\circ$	VR-7, $\alpha_0 = 4.1^\circ$	NLR-1, α $\alpha_0 = 2.5^\circ$	NLR-7301, $\alpha_0 = 5.7^\circ$
0.01		29205	21208	39021	43215	48019	63312	70107
.025		31119			43202	48023	63314	70109
.05		{ 29207 31121 25311 }	23206	37119	43204	48101	63318	70113
.10		{ 29211 31123 29213 }	23208	37121	43206	48103	63320	70115
.15		{ 29215 31201 }	23211	37123	43209			70117

α See table 19.

TABLE 15.- STALL SUPPRESSION AT $M_\infty = 0.18$, $\alpha = \alpha_0 + 10^\circ \sin \omega t$

k	NACA 0012, $\alpha_0 = 8.0^\circ$	A-01, $\alpha_0 = 7.5^\circ$	FX-098, $\alpha_0 = 6.5^\circ$	SC-1095, $\alpha_0 = 6.2^\circ$	HH-02	VR-7, $\alpha_0 = 4.7^\circ$	NLR-1	NLR-7301, $\alpha_0 = 9.4^\circ$
0.01	9110	30215	21219			50116		
.025						49216		70019
.05	9112	{24302 31215}	16213	33118				
.10						49300		70021
.20	9118	{24306 31217}	16215	33121		49307		70023
.25						49310		

TABLE 16.- PITCH DAMPING STUDIES AT $M_\infty = 0.30$, $\alpha = \alpha_0 + 2^\circ \sin \omega t$

NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301 α
$k = 0.01$							
$\alpha_0 = 14.0^\circ$ 30206							
$\alpha_0 = 14.0^\circ$ $\alpha_0 = 12.5^\circ$ $\alpha_0 = 12.5^\circ$ 39115 44221 48300							
$\alpha_0 = 15.5^\circ$ 44212							
$k = 0.025$							
$\alpha_0 = 12.5^\circ$ $\alpha_0 = 12.5^\circ$ $\alpha_0 = 12.5^\circ$ 44222 48301							
$\alpha_0 = 15.5^\circ$ $\alpha_0 = 13.0^\circ$ 44214 48116							
$\alpha_0 = 16.8^\circ$ 69119							
$\alpha_0 = 17.2^\circ$ 69206							
$k = 0.05$							
$\alpha_0 = 12.5^\circ$ $\alpha_0 = 12.5^\circ$ $\alpha_0 = 11.1^\circ$ $\alpha_0 = 16.5^\circ$ 44223 48302 63302 69310							
$\alpha_0 = 15.5^\circ$ $\alpha_0 = 13.0^\circ$ $\alpha_0 = 15.0^\circ$ $\alpha_0 = 16.8^\circ$ 44215 48118 63220 69121							
$\alpha_0 = 14.0^\circ$ $\alpha_0 = 17.0^\circ$ 48215 63213 69208							
$\alpha_0 = 17.5^\circ$ 69221							
$\alpha_0 = 18.5^\circ$ 69304							
$k = 0.10$							
$\alpha_0 = 12.5^\circ$ $\alpha_0 = 12.5^\circ$ 44300 48303							
$\alpha_0 = 14.0^\circ$ $\alpha_0 = 13.0^\circ$ 44202 48122							
$\alpha_0 = 15.5^\circ$ $\alpha_0 = 14.0^\circ$ 44216 48216							
$\alpha_0 = 16.8^\circ$ 69123							
$\alpha_0 = 17.2^\circ$ 69211							

TABLE 16.- Concluded.

NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301 ^a
$k = 0.15$							
$\alpha_o = 14.5^\circ$ 31310				$\alpha_o = 12.5^\circ$ 44303	$\alpha_o = 12.5^\circ$ 48304		$\alpha_o = 17.2^\circ$ 69213
				$\alpha_o = 15.5^\circ$ 44217			
$k = 0.20$							
$\alpha_o = 13.5^\circ$ 29223	$\alpha_o = 12.0^\circ$ 23219	$\alpha_o = 12.3^\circ$ 38201	$\alpha_o = 12.5^\circ$ 44304	$\alpha_o = 12.5^\circ$ 48308	$\alpha_o = 11.1^\circ$ 63304	$\alpha_o = 16.8^\circ$ 69201	
$\alpha_o = 14.5^\circ$ 29304	$\alpha_o = 14.0^\circ$ 23305	$\alpha_o = 14.0^\circ$ 38119	$\alpha_o = 14.0^\circ$ 44204	$\alpha_o = 13.0^\circ$ 48200	$\alpha_o = 15.0^\circ$ 63222	$\alpha_o = 17.2^\circ$ 69215	
31302	$\alpha_o = 16.0^\circ$ 23310	$\alpha_o = 16.0^\circ$ 38110	$\alpha_o = 15.5^\circ$ 42218	$\alpha_o = 14.0^\circ$ 48217	$\alpha_o = 16.4^\circ$ 63208	$\alpha_o = 17.5^\circ$ 69223	
$\alpha_o = 16.5^\circ$ 29309			$\alpha_o = 17.5^\circ$ 44209	$\alpha_o = 16.0^\circ$ 48209	$\alpha_o = 17.0^\circ$ 63215		

^aSee table 19.

TABLE 17.- NO SEPARATION: $M_\infty = 0.30$, $\alpha = 5^\circ + 5^\circ \sin \omega t$

k	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1 ^a	NLR-7301 ^a
0.01	10218							
.10	10221	25301	23107					
.20	10222	25303	23109					68211

^aSee table 19.

TABLE 18.- DYNAMIC BOUNDARY-LAYER TRIP DATA

M_∞	k	NACA 0012	A-01	FX-098	SC-1095	HH-02	VR-7	NLR-1	NLR-7301
0.18	0.05	{14019 14104	29115	17100	34318	42108	47110	64107	67019
.18	.10	{14021 14106	29117	17103	34321	42110	47112	64109	67021
.18	.15	{14023 14108	29119	17109	34323	42113	47114	64111	
.18	.20								67023
.30	.025	{14117 14200	29023	17117		42019	47020	64019 ^a	(a)
.30	.05	{14119 14202	29101	17119	34306	42021	47022	64021 ^a	(a)
.30	.10	{14208 14210	29106	17200	34308	42100	47100	64023 ^a	(a)

^aSee table 19.

TABLE 19.- MISCELLANEOUS DYNAMIC DATA

Airfoil	Frame	M _∞	α ₀	α ₁	k	Remarks
N-0012	8019	0.035	10.0	10.0	0.10	Low Reynolds number, 0.5×10^6
	8021	.035	10.0	10.0	.15	
	8023	.035	10.0	10.0	.25	
	8104	.035	15.0	10.0	.15	
	8106	.035	15.0	14.0	.10	
	8116	.07	15.0	10.0	.15	Match reference 3
	8118	.07	15.0	10.0	.25	
	8123	.07	15.0	14.0	.10	Match reference 3
	8203	.07	10.0	10.0	.25	
	8210	.11	10.0	10.0	.25	
	8222	.18	15.0	10.0	.15	Match reference 3
	8306	.18	15.0	14.0	.10	Match reference 3
	9022	.18	15.0	6.0	.24	Match reference 3
	9101	.18	15.0	5.0	.29	
	9106	.18	10.0	10.0	.25	
	7108	.30	8.0	5.0	.025	Variable α ₀
	7110		8.0		.10	
	7111		8.0		.20	
	7216		8.8		.05	
	7214		8.8		.10	
	7212		8.8		.15	
	7104		9.0		.025	
	7019		9.0		.05	
	7021		9.0		.10	
	7101		9.0		.15	
	7023		9.0		.20	
			10.0			See table 17
	7117		11.0		.025	
	7118		11.0		.05	
	7119		11.0		.10	
	7120		11.0		.15	
	7121		11.0		.20	
	7200		12.0		.025	
	7202		12.0		.05	
	7205		12.0		.10	
	7305		12.0		.15	
	7207		12.0		.20	
			15.0			See table 16
	10309		2.8	10.0	.10	
	10305		3.8			
	10303		5.0			
	9302		10.0			
	10022		12.0			
	9217	.29	15.0			
	14220	.29	15.0			
	10101	.27	20.0			
	10104	.30	12.0	8.0	.05	Match reference 17
	10105	.30	12.0	8.0	.10	Match reference 17
	10108	.30	12.0	8.0	.13	Match reference 17
	15218	.29	15.0	10.0	.10	Pressure orifices closed

TABLE 19.- Continued.

Airfoil	Frame	M_∞	α_0	α_1	k	Remarks
N-0012	Many	Variable	Variable	10.0	0.001	Quasi-static; see table 12
W-098	23117	0.30	5.0	10.0	.10	
Ames-01	30201		11.0	5.0	.01	
Ames-01	25214				.05	
Ames-01	25216				.10	
SC-1095	39110				.01	
	37219				.05	
	37221				.10	
	37304		12.0	8.0	.05	Match reference 18
	37305		12.0	8.0	.10	Match reference 18
	37306		12.0	8.0	.13	Match reference 18
HH-02	43314		11.0	5.0	.025	
HH-02	43315		11.0	5.0	.05	
HH-02	43316		11.0	5.0	.10	
VR-7	54019	.18	10.0	10.0	.025	
	54022		10.0		.05	
	54101		10.0		.10	
	54110		10.0		.15	
	54113		10.0		.20	
	54116		10.0		.25	
	49023		15.0		.01	
	49110				.025	
	49117				.05	
	49120				.10	
	58121				.10	
	49203				.15	
	54216				.15	
	57018				.15	
	58018				.15	
	58120				.15	
	49206				.20	
NLR-1	65223	.11	7.0	5.0	.025	No separation
	65300	.11	7.0	5.0	.20	No separation
	62114	.20	15.0	10.0	.10	
	65207	.20	15.0	10.0	.10	
	62121	.20	10.0	10.0	.17	Match reference 19
	62202	.20	15.0	5.0	.17	
	62201	.20	15.0	5.0	.28	
	62403	.30	10.0	10.0	.12	
	63100		15.0	5.0	.12	
	63122		12.0	8.0	.12	
	65309		7.0	5.0	.01	No separation
	65311		7.0	5.0	.20	No separation
	65121		-2.0	10.0	.01	Stall at negative α
	65122				.025	Stall at negative α
	65123				.05	Stall at negative α
	65200				.10	Stall at negative α
NLR-1T	64212				.01	Trip; stall at negative α
NLR-1T	64213				.025	Trip; stall at negative α
NLR-1T	64214				.05	Trip; stall at negative α

TABLE 19.- Concluded.

Airfoil	Frame	M_∞	α_0	α_1	k	Remarks
NLR-1T	64215	0.30	-2.0	10.0	0.10	Trip; stall at negative α
NLR-1T	64119	.30	2.5		.01	Trip; stall suppression
NLR-1T	64121	.30	2.5		.025	Trip; stall suppression
NLR-1T	64202	.30	2.5		.05	Trip; stall suppression
NLR-1T	64204	.30	2.5		.10	Trip; stall suppression
NLR-7	67201	.11	10.0		.10	
	67208	.18	10.0		.025	
	67210	.18	10.0		.10	
	67212	.18	10.0		.20	
	67218	.18	15.0		.025	
	67220	.18	15.0		.10	
	67222	.18	15.0		.20	
	67310	.25	10.0		.10	
	68219	.30	12.0	2.0	.05	No separation
	68221	.30	12.0	2.0	.10	No separation
	68304	.30	12.0	2.0	.20	No separation
NLR-7T	67108	.30	10.0	5.0	.025	Trip
NLR-7T	67110	.30	10.0	5.0	.05	Trip
NLR-7T	67112	.30	10.0	5.0	.10	Trip

TABLE 20.- TEST CASES FOR NUMERICAL ANALYSIS (ref. 1)

Case	Frame	Airfoil	α_0	α_1	k	Case	Frame	Airfoil	α_0	α_1	k
1	10222	NACA 0012	5	5	0.20	7	10212	NACA 0012	10	5	0.20
2	68211	NLR-7301	5	↓	↓	8	9302	↓	10	10	.10
3	7111	NACA 0012	8	↓	↓	9	10113	↓	15	5	.01
4	68203	NLR-7301	10	↓	↓	10114	↓	↓	↓	↓	.025
5	7023	NACA 0012	9	↓	↓	10117	↓	↓	↓	↓	.05
6	45221	VR-7	10	↓	.025	10118	↓	↓	↓	↓	.10
↓	45223	↓	↓	↓	.05	10120	↓	↓	↓	↓	.15
↓	45300	↓	↓	↓	.10	10123	↓	↓	↓	↓	.20
↓	45302	↓	↓	↓	.15	10	45203	VR-7	↓	↓	.01
↓	45303	↓	↓	↓	.20	45205	↓	↓	↓	↓	.025
7	10202	NACA 0012	↓	↓	.01	45207	↓	↓	↓	↓	.05
↓	10203	↓	↓	↓	.025	45209	↓	↓	↓	↓	.10
↓	10204	↓	↓	↓	.05	45211	↓	↓	↓	↓	.15
↓	10208	↓	↓	↓	.10	45213	↓	↓	↓	↓	.20
↓	10211	↓	↓	↓	.15						

TABLE 21.- ARCHIVED TAPE ASSIGNMENT

Airfoil	Tape number
NACA 0012	03462B
Ames A-01	C1065C
Wortmann FX 69-H-098	C1064C
Hughes HH-02 (with tab)	C1066C
Sikorsky SC-1095	C1067C
Vertol VR-7 (with tab)	03469B
NLR-1	C1069C
NLR-7301	C1074C

TABLE 22.- MAGNETIC TAPE
ATTRIBUTES

Unlabeled file sequence 2400-ft reel 9 Track 1600 Bits/in. Odd parity EBCDIC mode Blocked (4000 bytes - 50 records) Fixed-length records (80 bytes) Formatted data
--

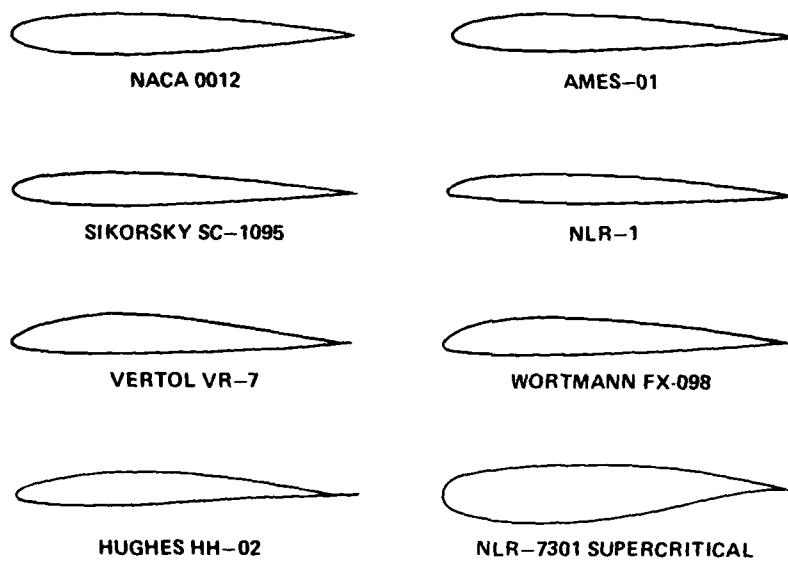
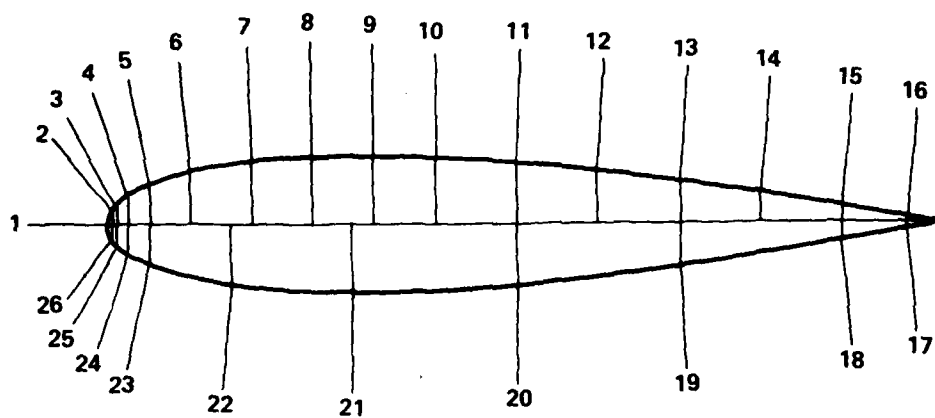


Figure 1.- Airfoil profiles tested.



NOMINAL LOCATIONS OF PRESSURE TRANSDUCERS

1:0.000	5:0.050	9:0.325	13:0.700	17:0.980	21:0.300	25:0.010
2:0.005	6:0.100	10:0.400	14:0.800	18:0.900	22:0.150	26:0.005
3:0.010	7:0.175	11:0.500	15:0.900	19:0.700	23:0.050	
4:0.025	8:0.250	12:0.600	16:0.980	20:0.500	24:0.025	

Figure 2.- Upper and lower surface-pressure transducer locations.

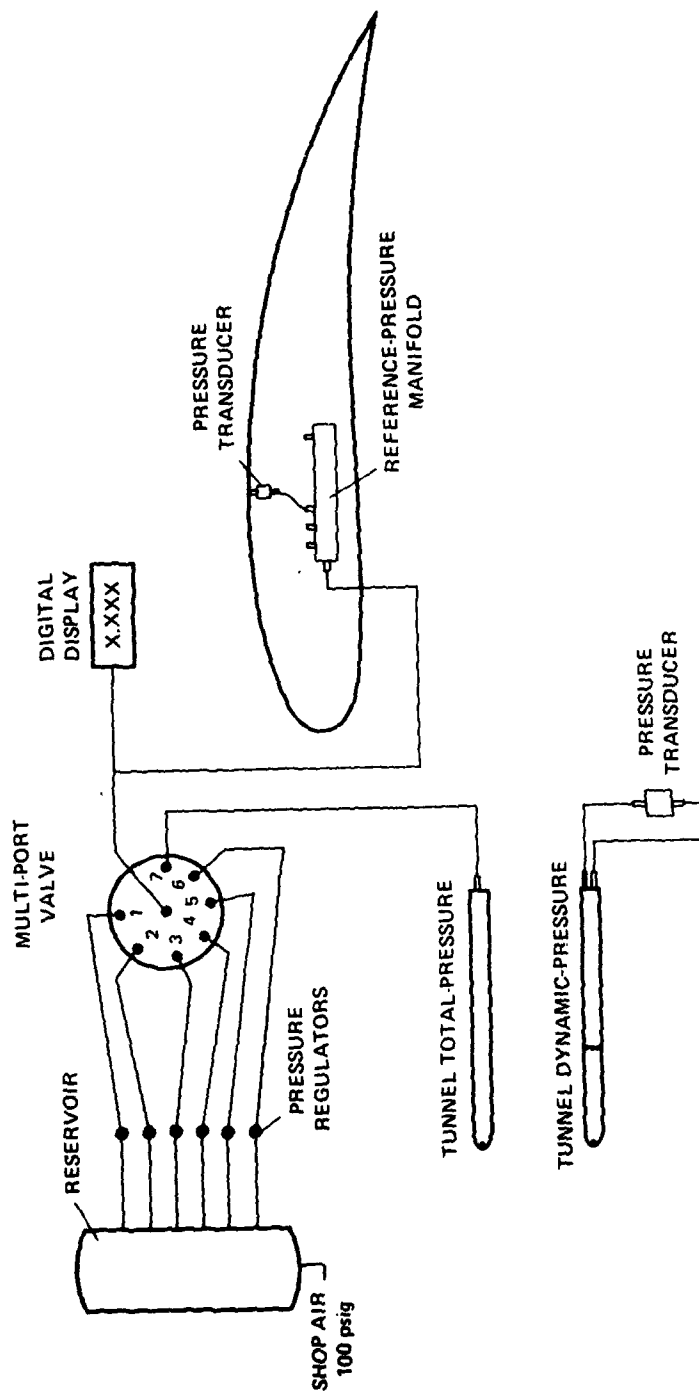


Figure 3.- Plumbing for reference pressures.

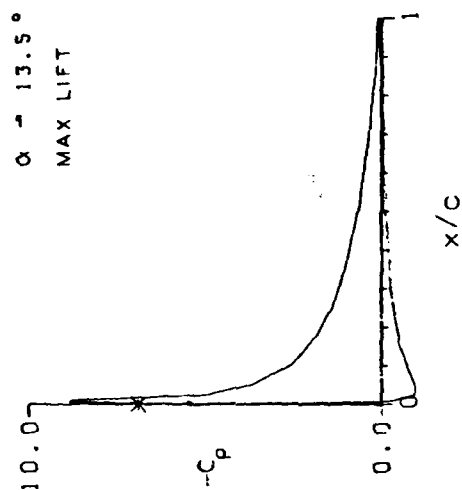
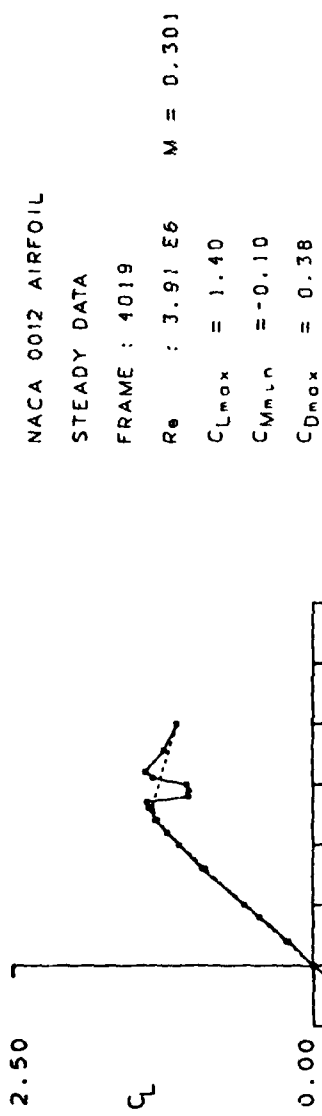


Figure 4.- Static data for NACA 0012 airfoil.

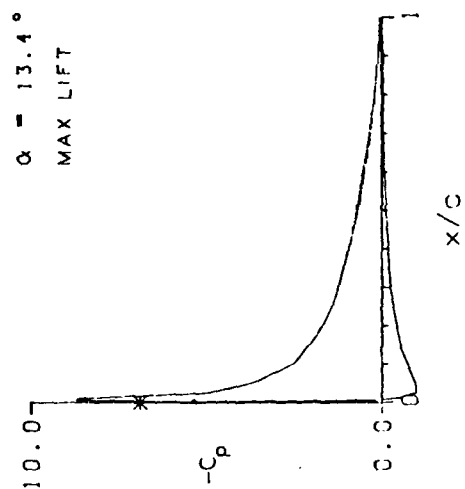
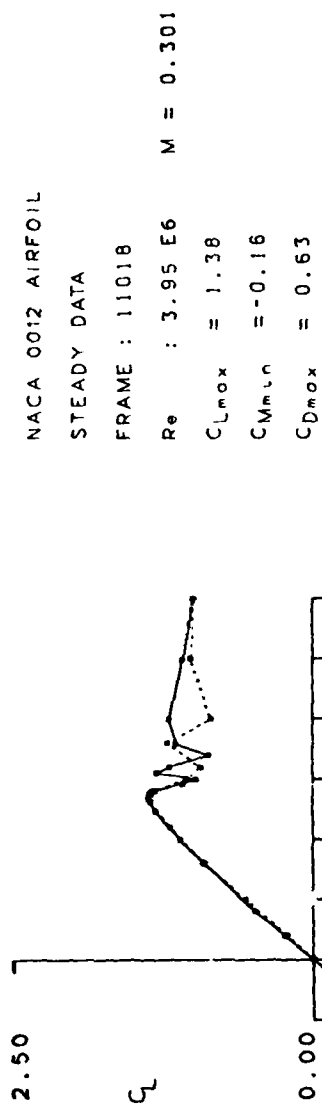


Figure 4.- Concluded.

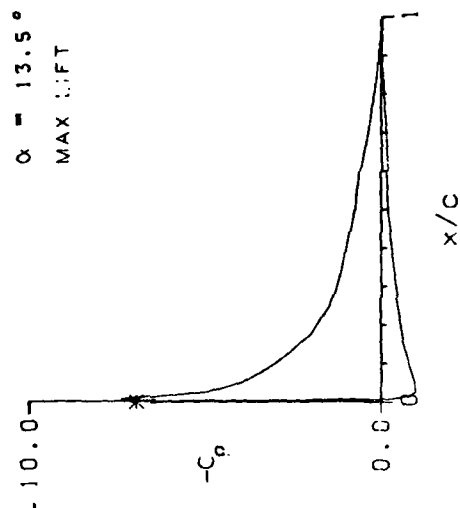


Figure 5.- Static data for Ames A-01 airfoil.

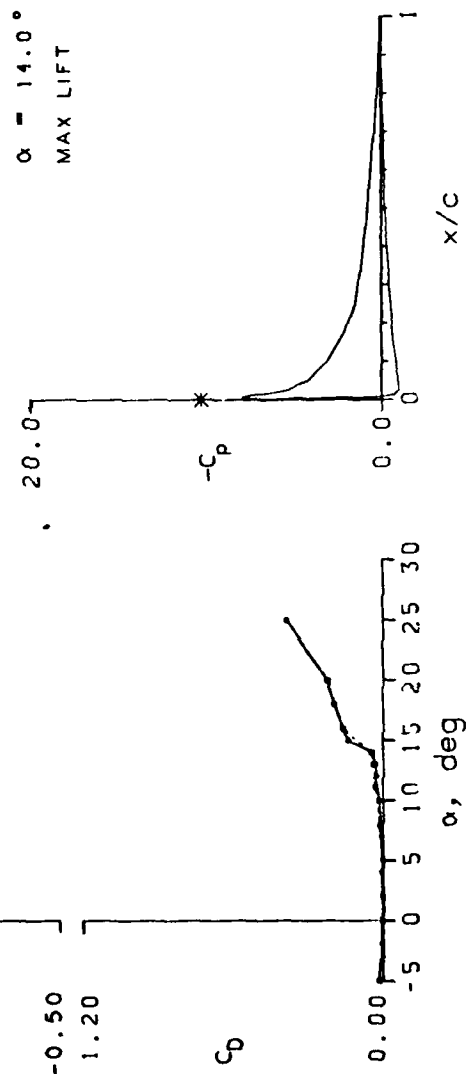
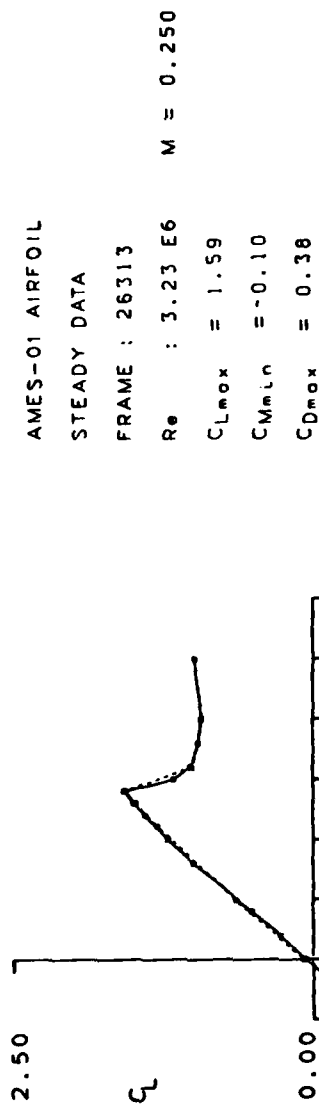


Figure 5.- Continued.

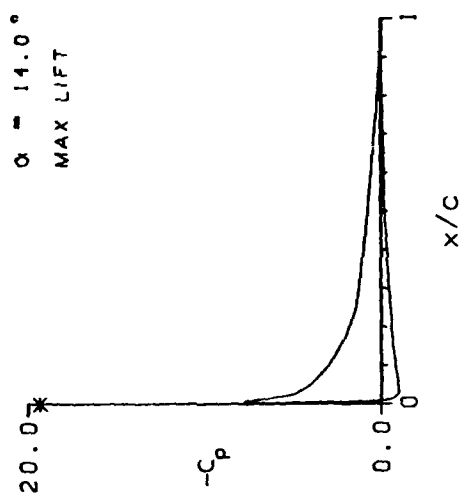
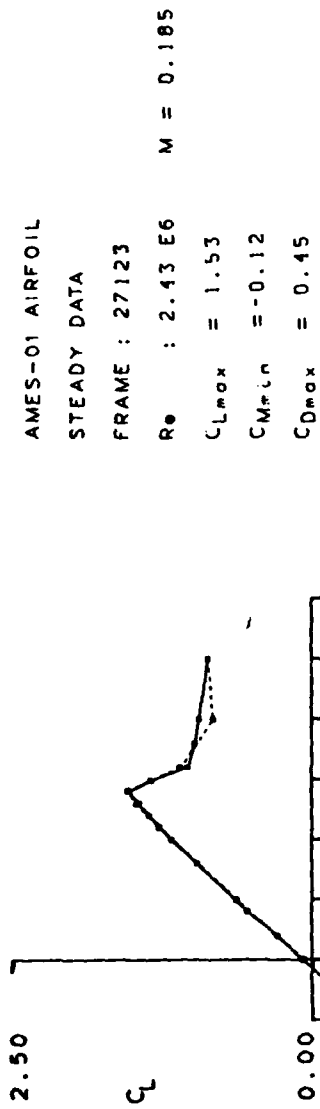


Figure 5.- Continued.

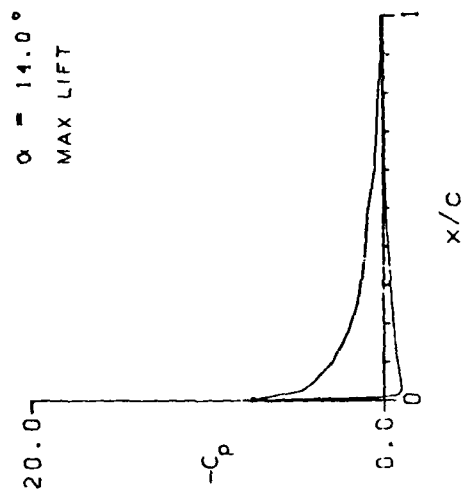


Figure 5.- Continued.

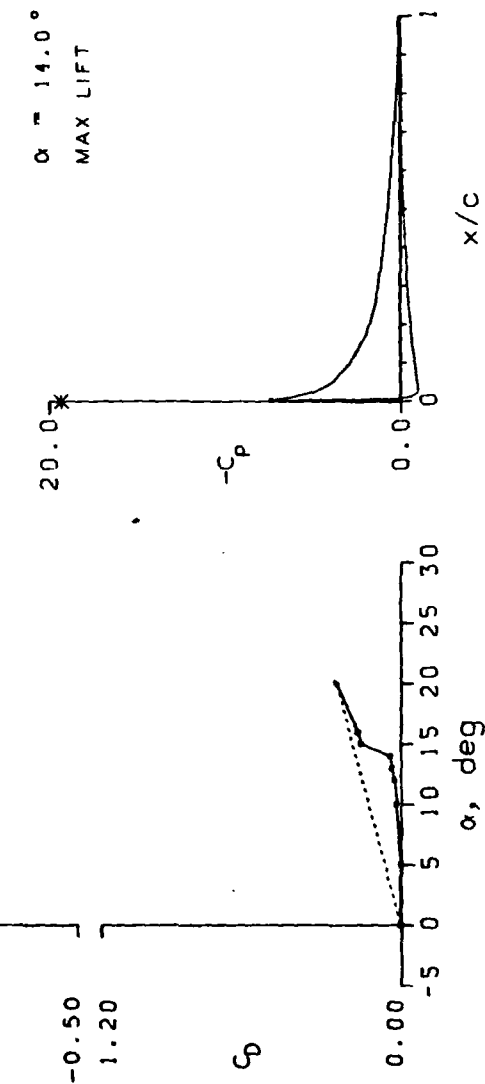
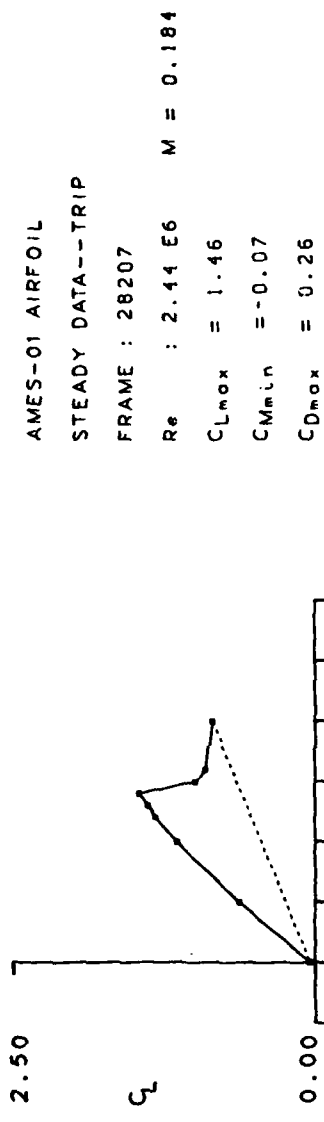


Figure 5.- Continued.

AMES-01 AIRFOIL
STEADY DATA--TRIP

FRAME : 28312

Re : 3.90 E6 M = 0.300

C_{Lmax} = 1.50

C_{Mmin} = -0.08

C_{Dmax} = 0.19

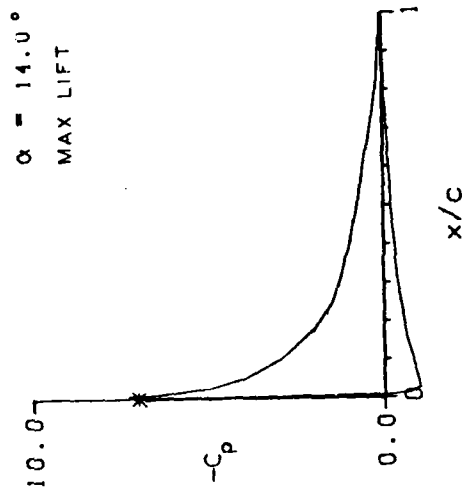
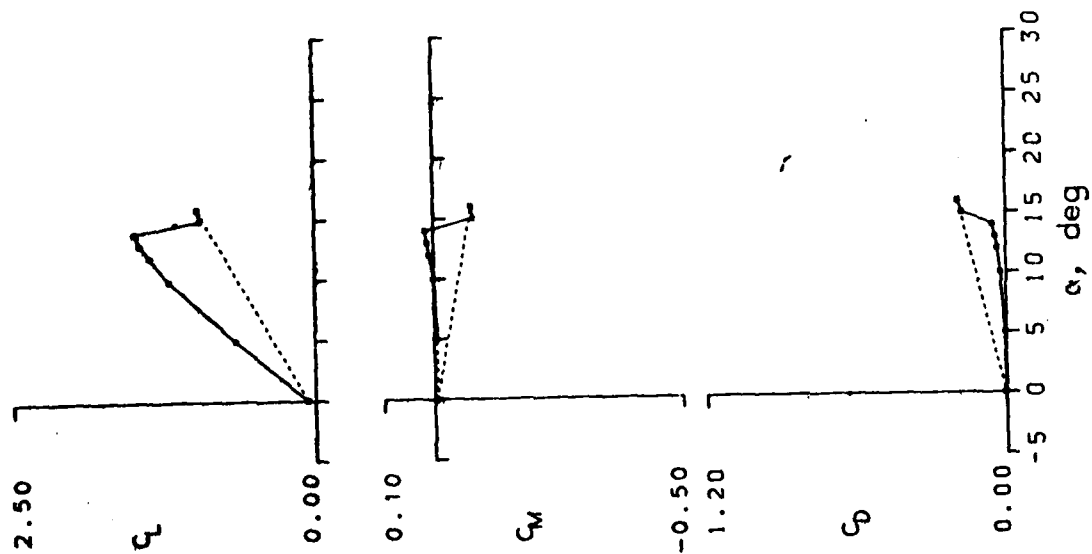


Figure 5.- Concluded.

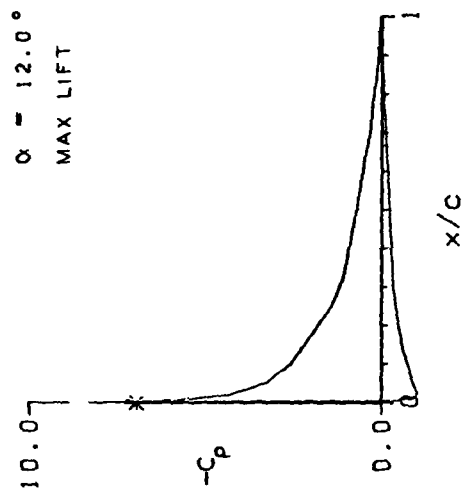
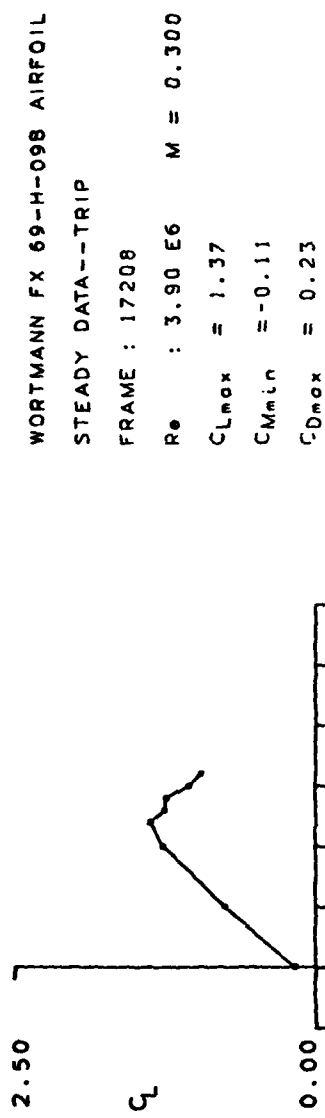


Figure 6.- Static data for Wortmann FX-098 airfoil.

WORTMANN FX 69-H-098 AIRFOIL
 STEADY DATA--TRIP
 FRAME : 18019
 $Re : 2.39 \times 10^6$ $M = 0.185$
 $C_{Lmax} = 1.36$
 $C_{Mmin} = -0.09$
 $C_{Dmax} = 0.31$

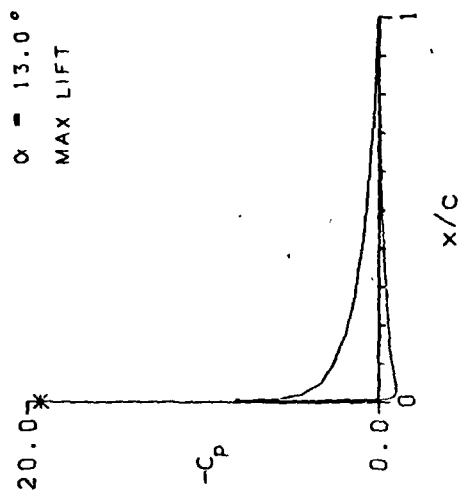
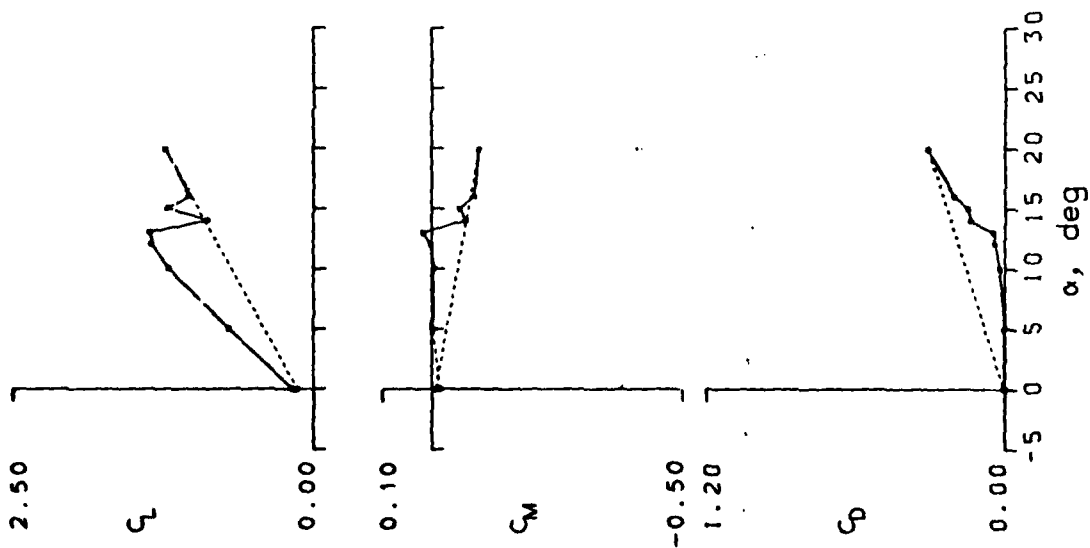


Figure 6.- Continued.

WORTMANN FX 69-M-098 AIRFOIL
 STEADY DATA
 FRAME : 18215
 Re : 1.49 E6 M = 0.109
 C_{Lmax} = 1.44
 C_{Mmin} = -0.13
 C_{Dmax} = 0.51

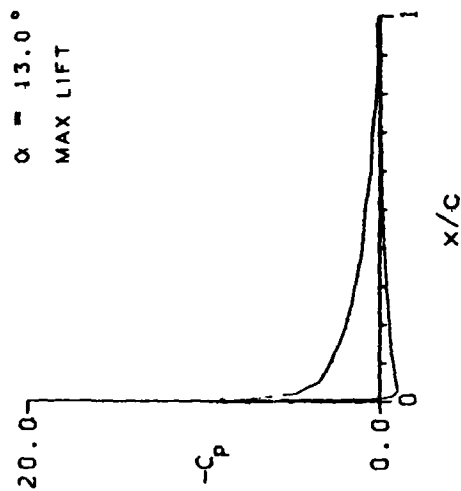
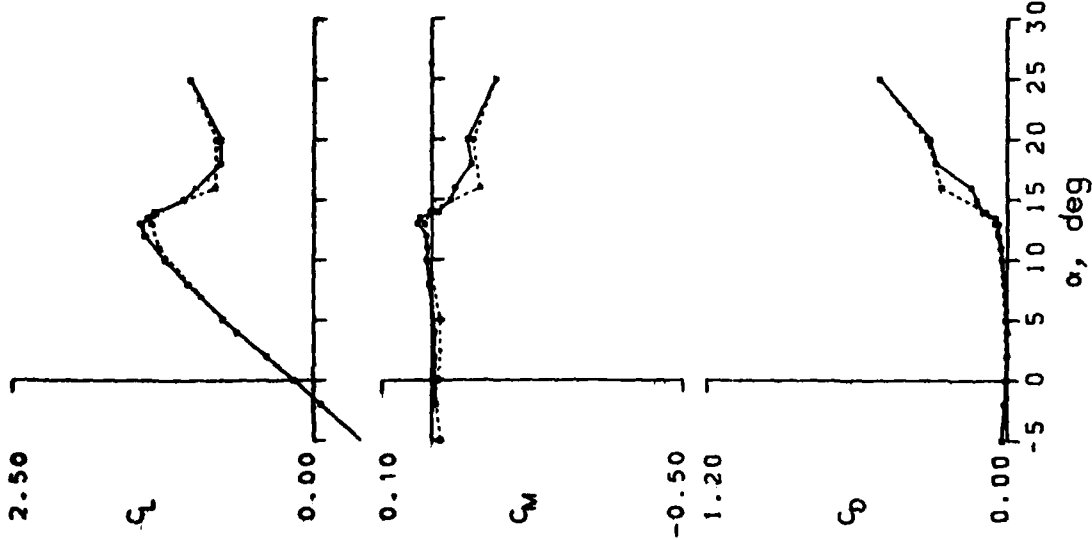


Figure 6.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

STEADY DATA

FRAME : 19020

Re : 2.40 E6 M = 0.185

C_{Lmax} = 1.51

C_{Mmin} = -0.14

C_{Dmax} = 0.49

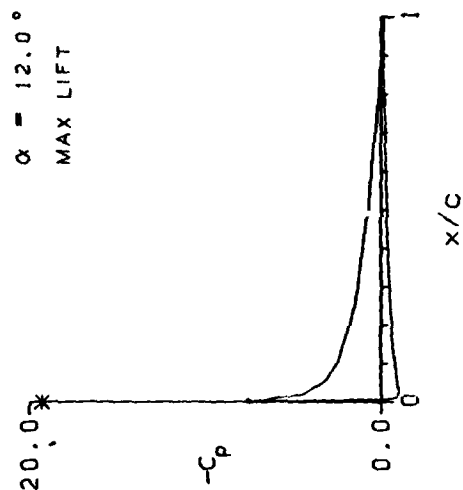
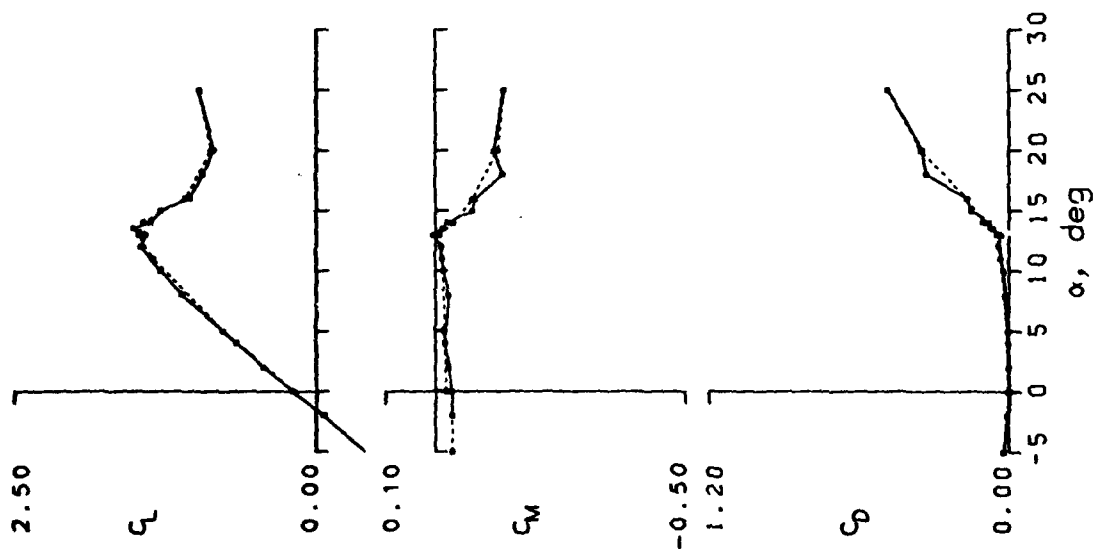


Figure 6.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

STEADY DATA

FRAME : 19314

Re : 3.24 E6 M = 0.251

C_{Lmax} = 1.50

C_{Mmin} = -0.11

C_{Dmax} = 0.94

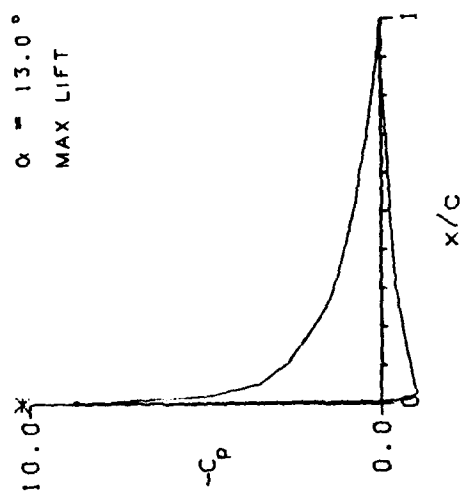
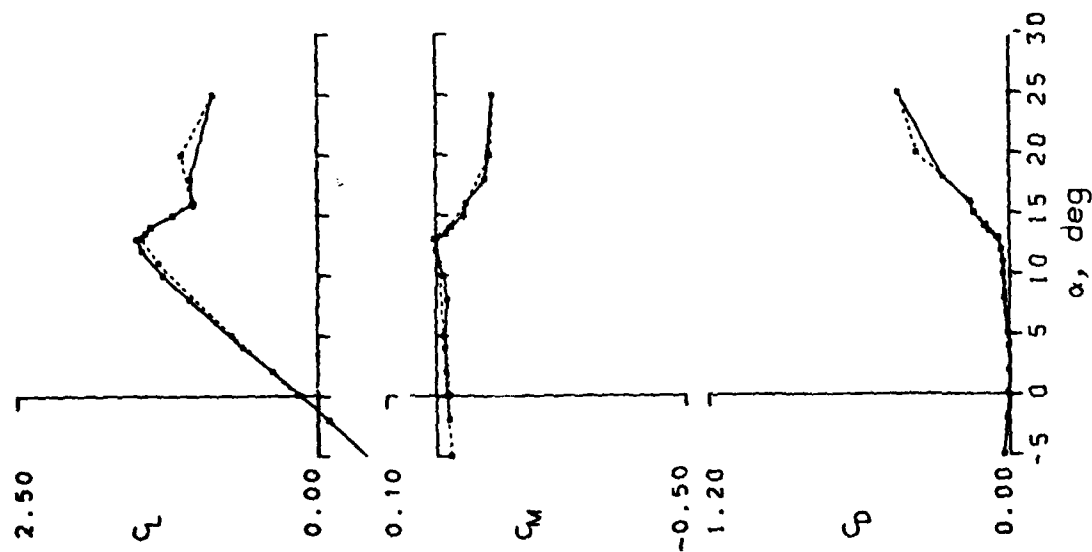


Figure 6.- Continued.

WORTMANN FX 69-M-098 AIRFOIL

STEADY DATA

FRAME : 20118

R_e : 3.76 E6 M = 0.301

C_{Lmax} = 1.49

C_{Mmin} = -0.12

C_{Dmax} = 0.43

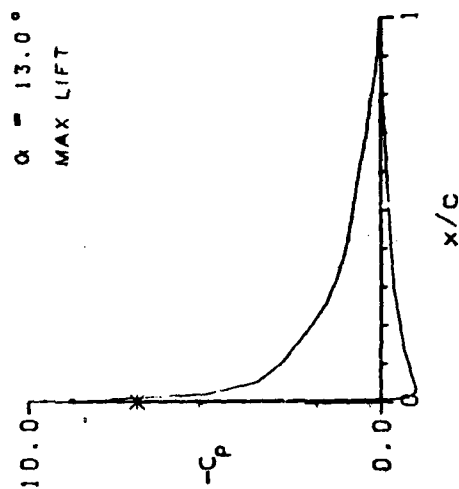
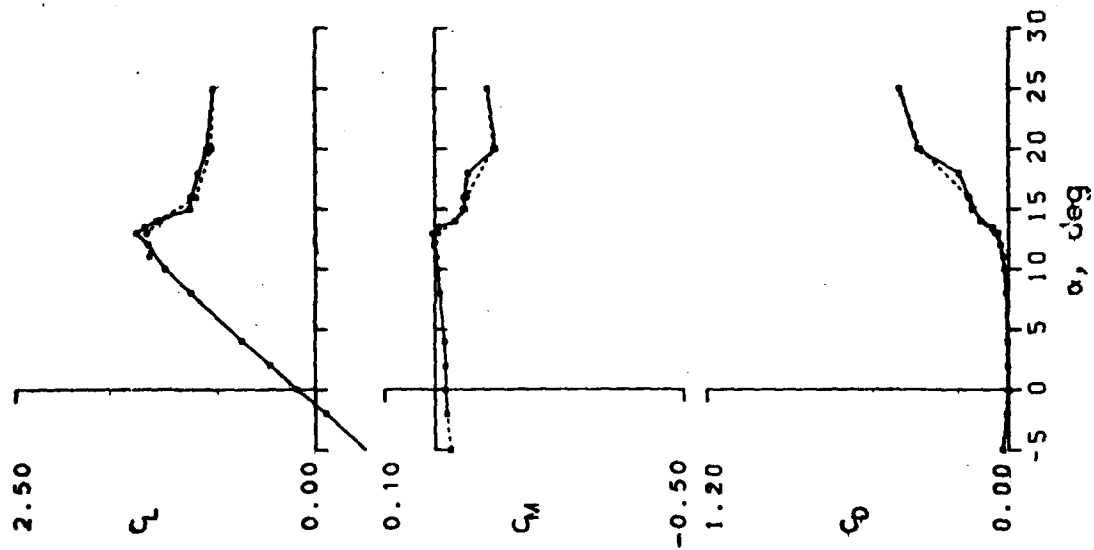


Figure 6.- Concluded.

SIKORSKY SC-1095 AIRFOIL

STEADY DATA--TRIP

FRAME : 34022

Re : 3.97 E6 M = 0.302

$C_{Lmax} = 1.43$

$C_{Mmin} = -0.12$

$C_{Dmax} = 0.25$

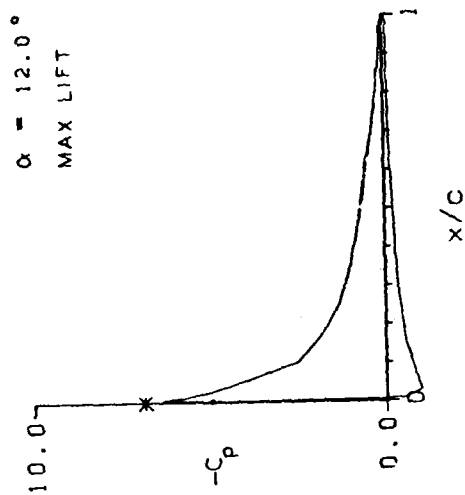
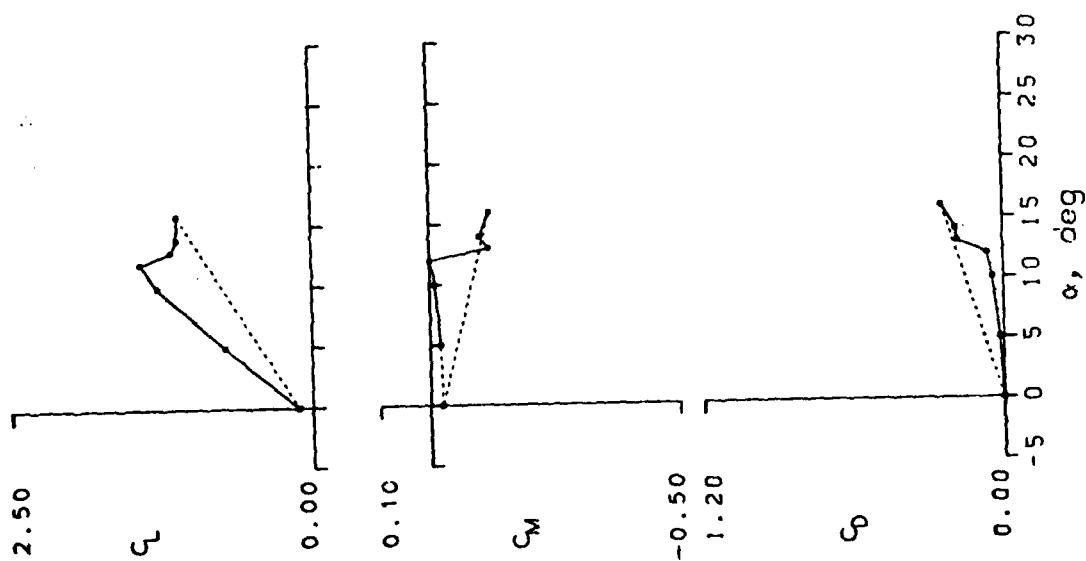


Figure 7.- Static data for Sikorsky SC-1095 airfoil.

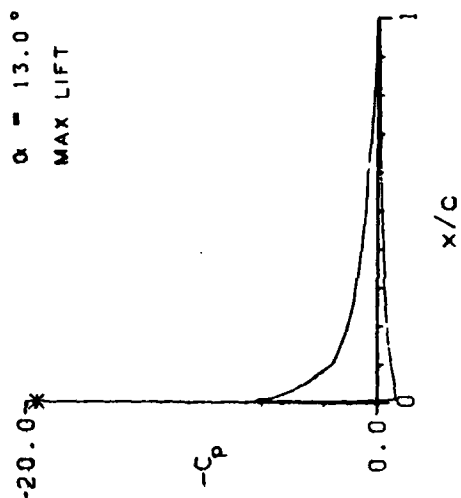
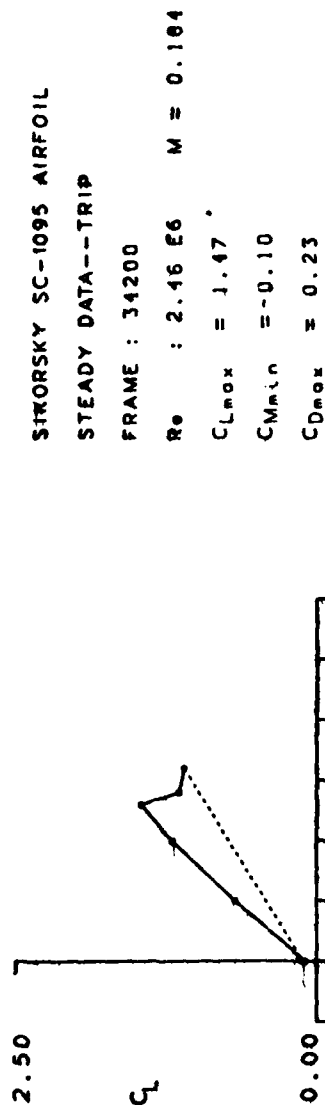


Figure 7.- Continued.

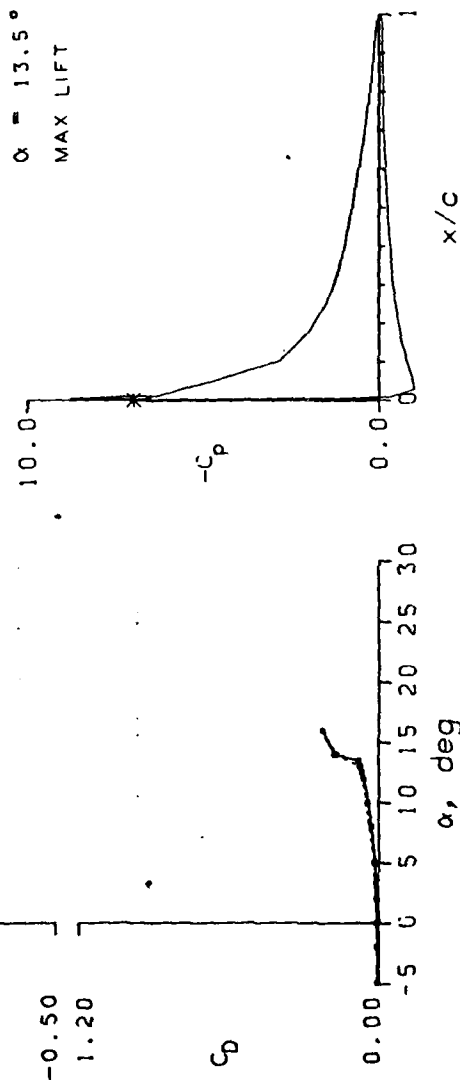
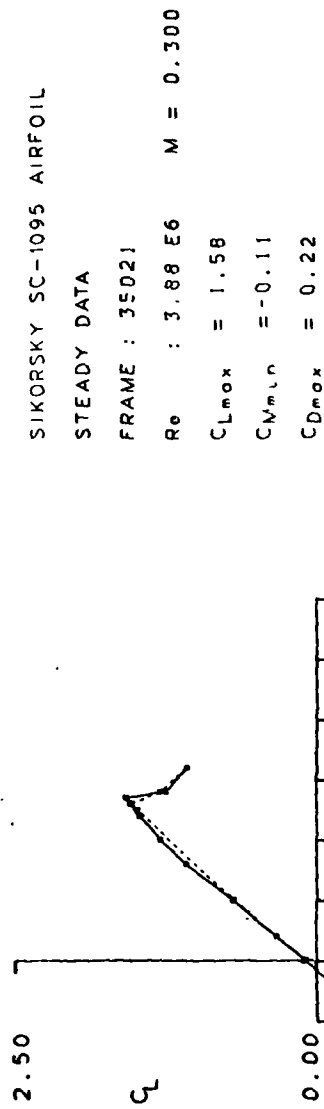


Figure 7.- Continued.

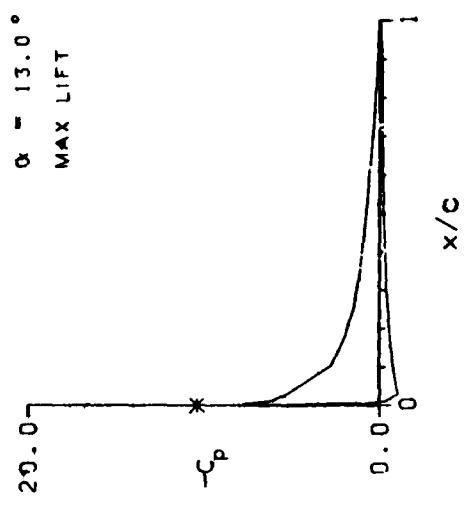
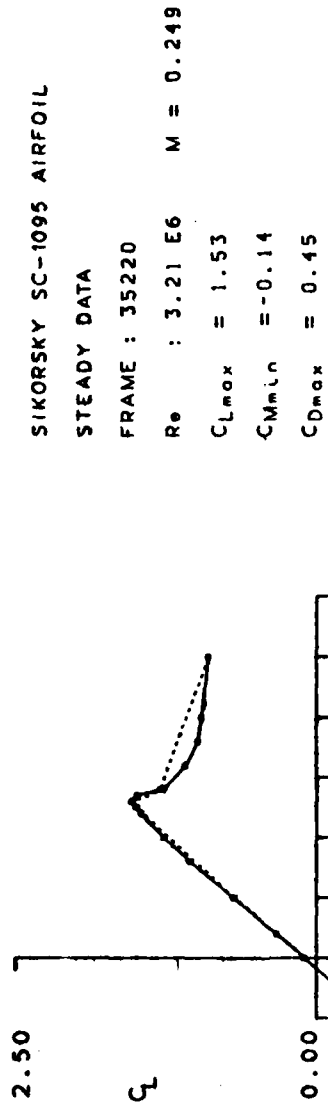


Figure 7.- Continued.

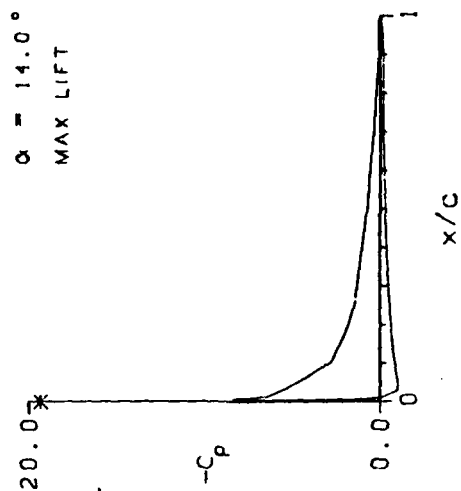
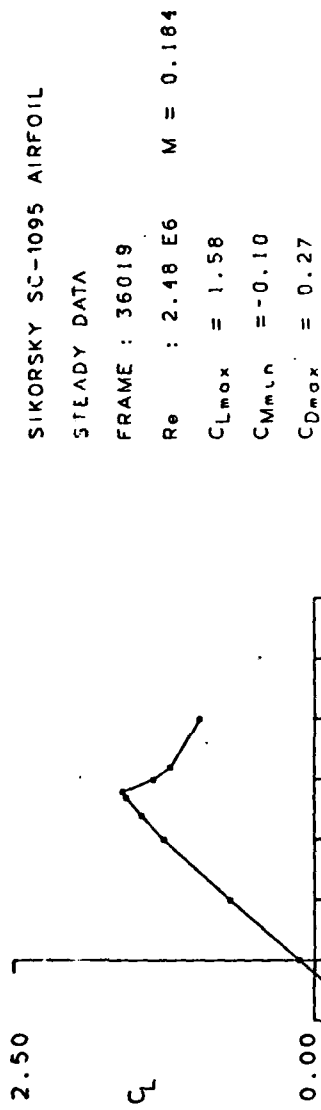


Figure 7.- Continued.

SIKORSKY SC-1093 AIRFOIL

STEADY DATA

FRAME : 36202

R_e : 1.44 E6 $M = 0.110$

$C_{Lmax} = 3.55$

$C_{Mmin} = -0.13$

$C_{Dmax} = 0.28$

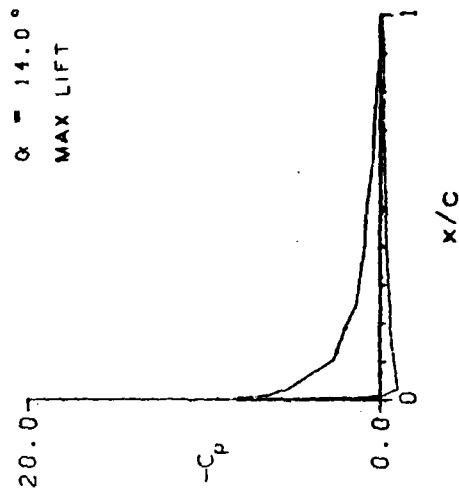
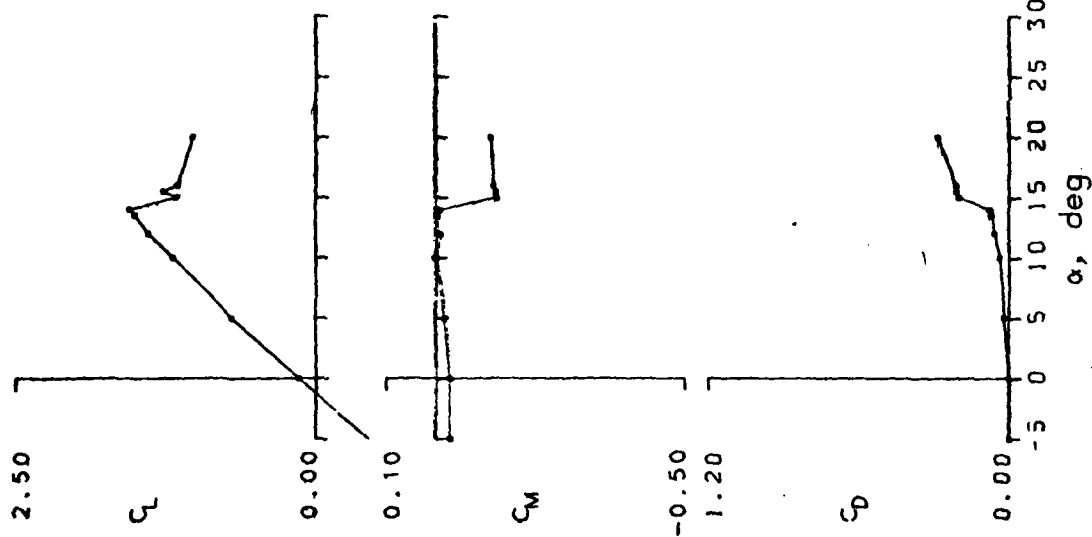


Figure 7.- Concluded.

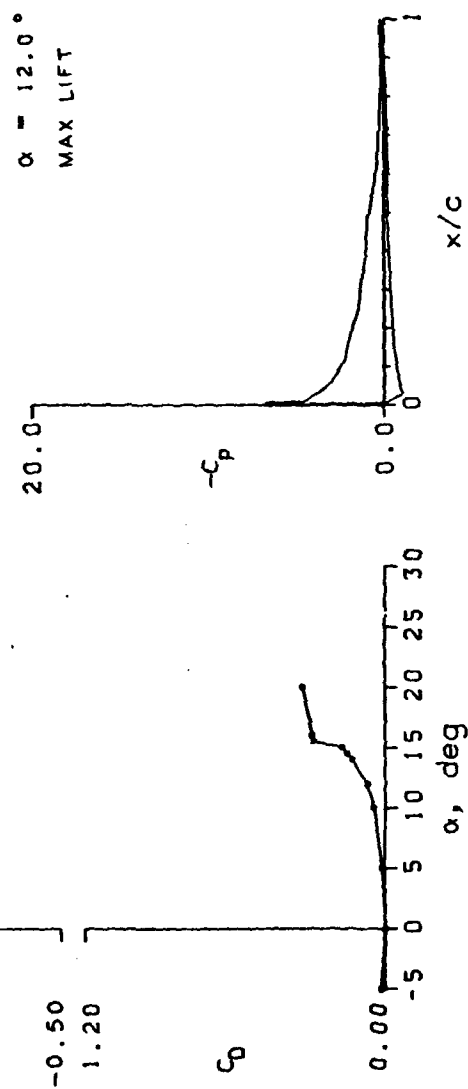
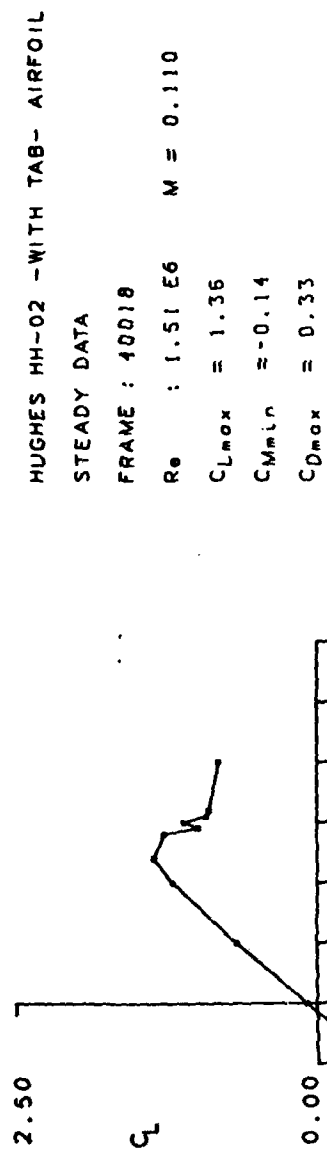


Figure 8.- Static data for Hughes HH-02 airfoil.

HUGHES HH-02 -WITH TAB- AIRFOIL

STEADY DATA

FRAME : 40114

Re : 2.47 E6 M = 0.185

$C_{L,max}$ = 1.48

$C_{M,min}$ = -0.13

$C_{D,max}$ = 0.34

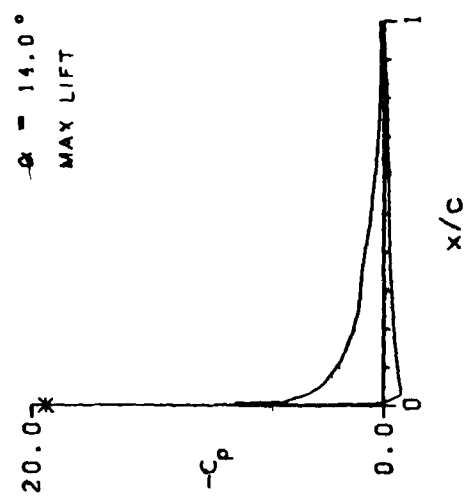
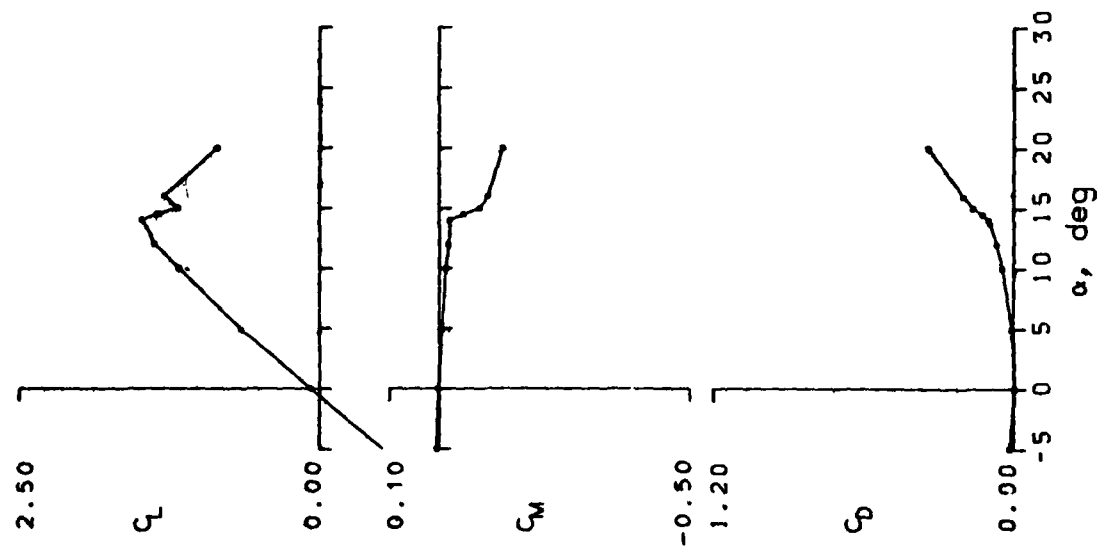


Figure 8.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

STEADY DATA

FRAME : 41019

Re : 4.10 E6 M = 0.300

$C_{Lmax} = 1.47$

$C_{Mmin} = -0.12$

$C_{Dmax} = 0.32$

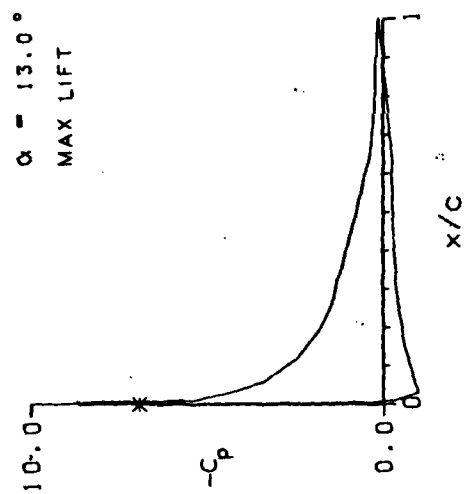
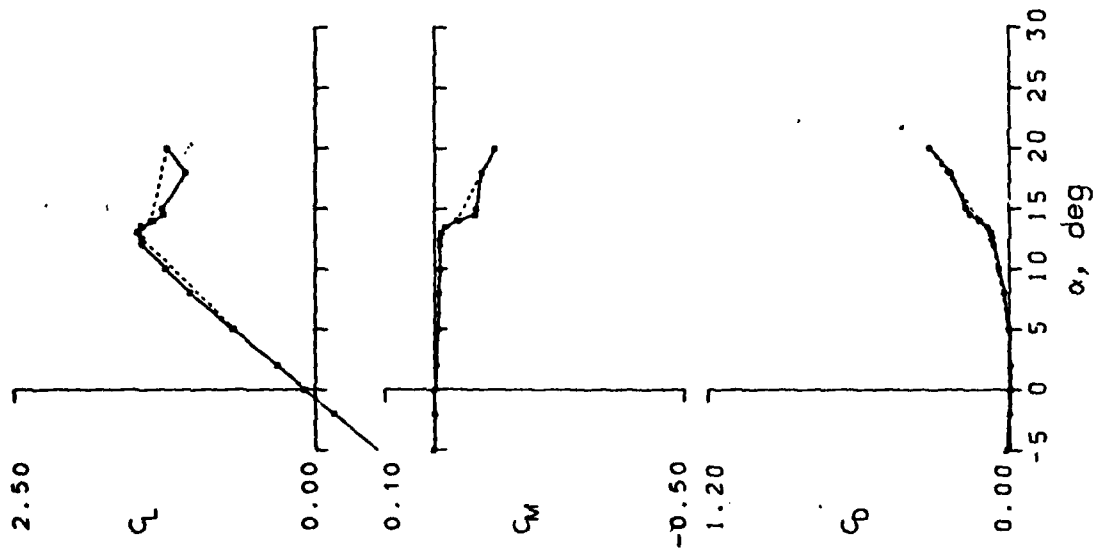


Figure 8.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

STEADY DATA

FRAME : 41110

Re : 3.37 E8 M = 0.248

C_{Lmax} = 1.54

C_{Mmin} = -0.10

C_{Dmax} = 0.28

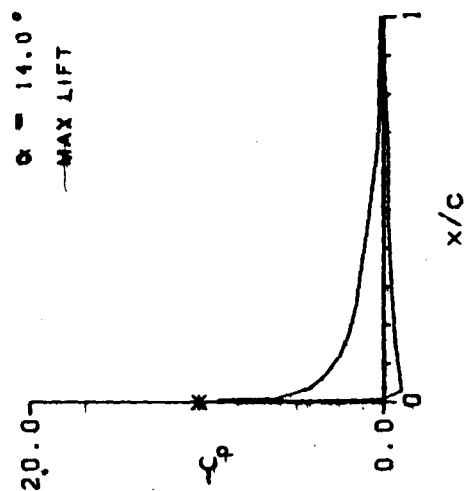
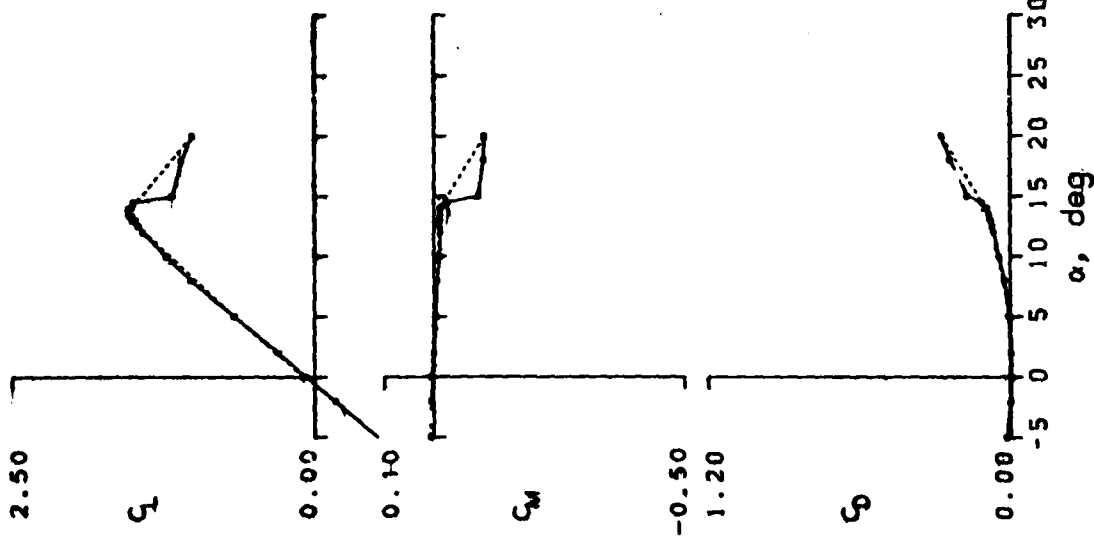


Figure 8.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

STEADY DATA--TRIP

FRAME : 41221

Re : 4.01 E6 M = 0.299

CLmax = 1.42

CMmin = -0.11

CDmax = 0.23

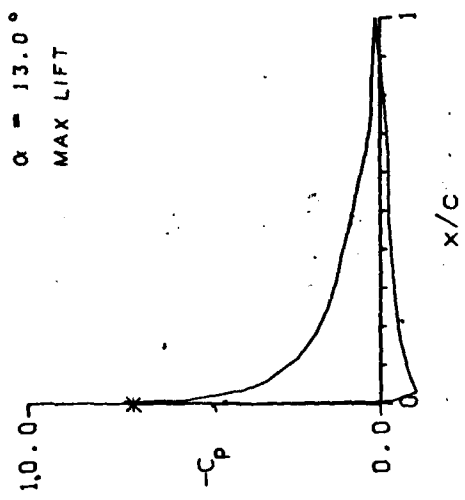
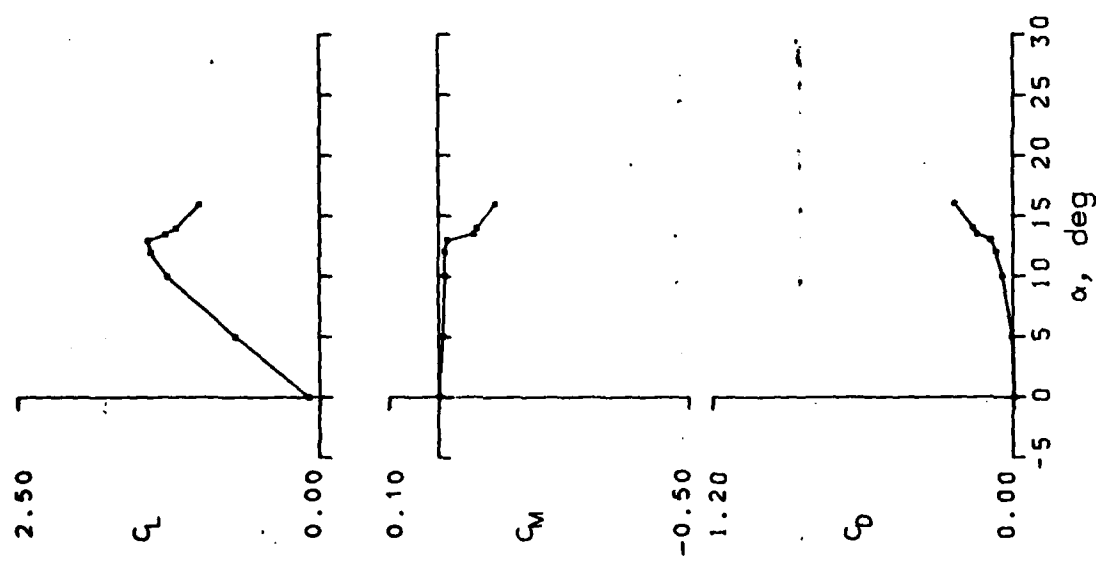


Figure 8.- Continued.

HUGHES MH-02 -WITH TAB- AIRFOIL
 STEADY DATA--TRIP
 FRAME : 41401
 R_0 : 2.50 E6 $M = 0.183$
 $C_{Lmax} = 1.46$
 $C_{Mmin} = -0.12$
 $C_{Dmax} = 0.23$

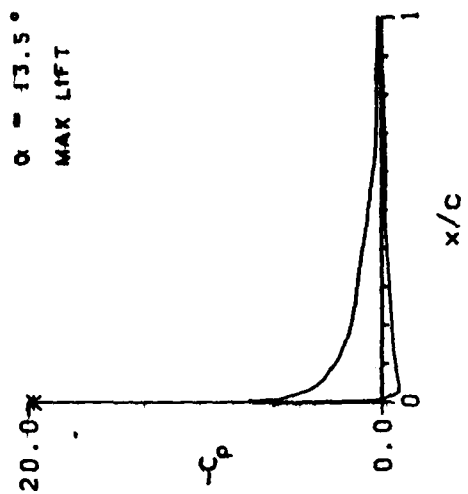
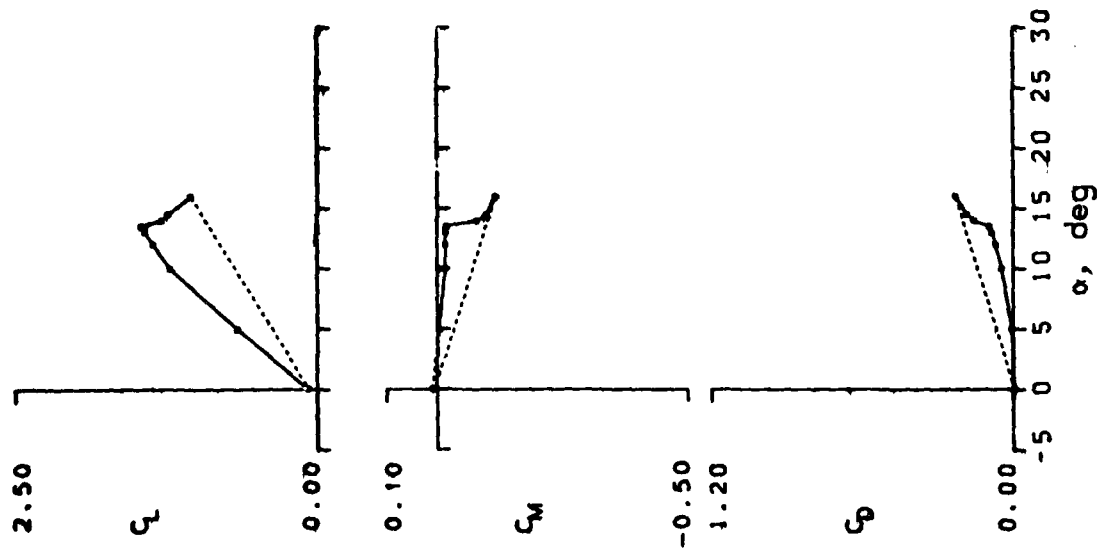


Figure 8.- Concluded.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

STEADY DATA

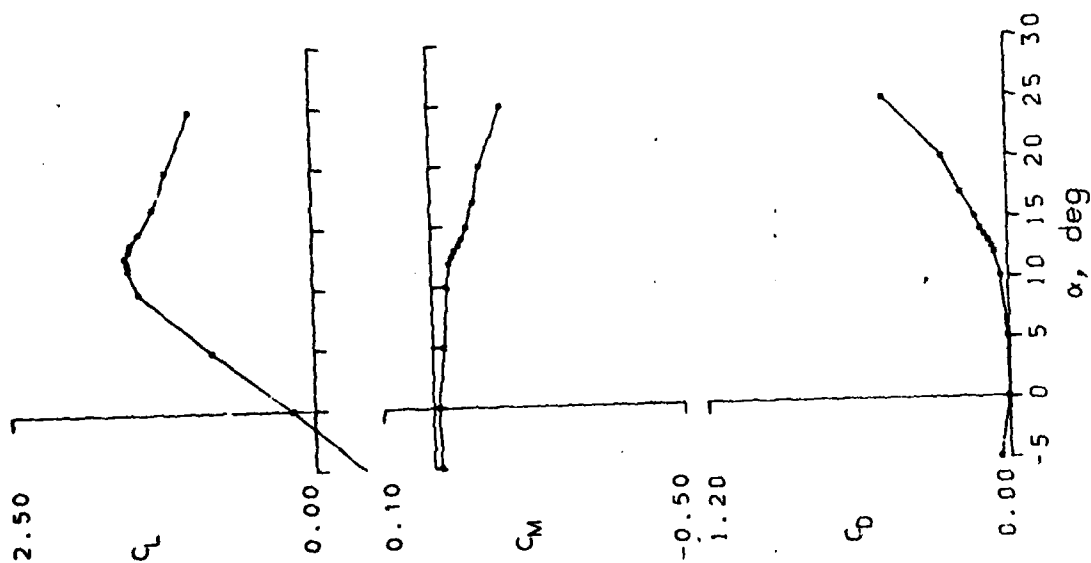
FRAME : 46018

R_e : 1.54 E6 $M = 0.109$

$C_{Lmax} = 1.55$

$C_{Mmin} = -0.15$

$C_{Dmax} = 0.49$



$\alpha = 13.0^\circ$
MAX LIFT

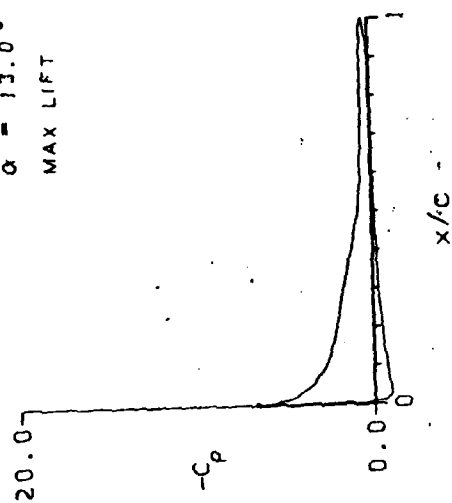


Figure 9.- Static data for Vertol VR-7 airfoil.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

STEADY DATA

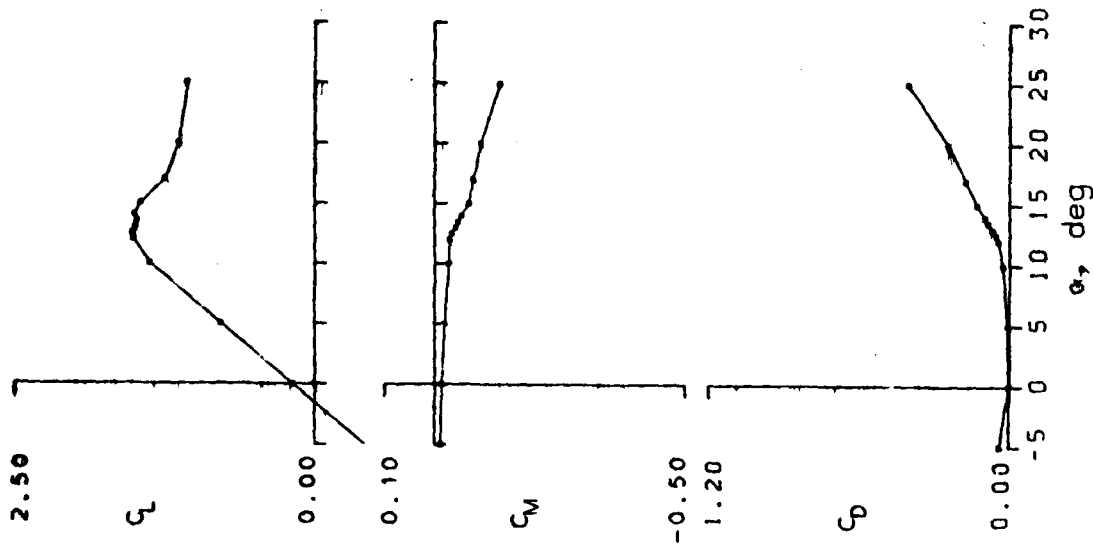
FRAME : 46116

Re : 2.56 E6 M = 0.184

CLmax = 1.51

CMmin = -0.13

CDmax = 0.40



$\alpha = 12.5^\circ$
MAX LIFT

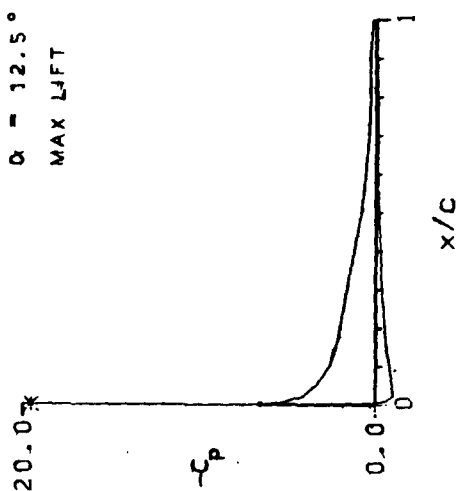


Figure 9.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

STEADY DATA

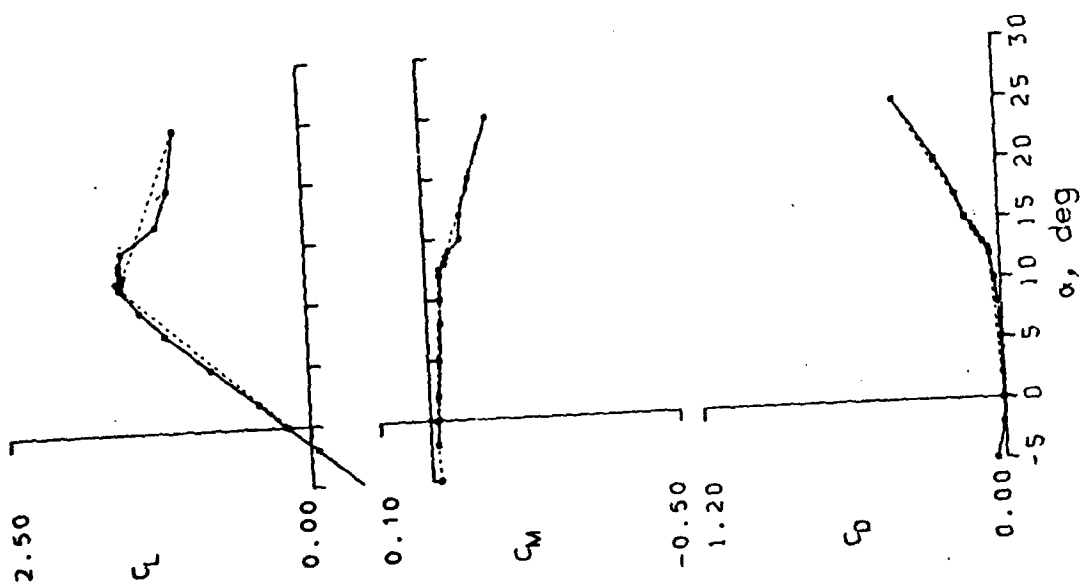
FRAME : 46307

Re : 3.44 E6 M = 0.218

C_{Lmax} = 1.57

C_{Mmin} = -0.14

C_{Dmax} = 0.40



$\alpha = 12.5^\circ$
MAX LIFT

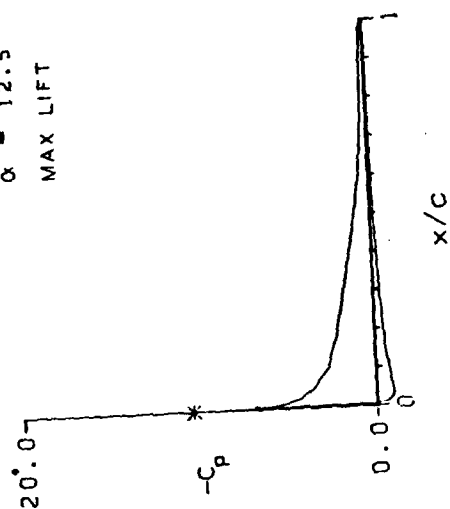


Figure 9.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 STEADY DATA.
 FRAME : 46418
 $R_e : 4.05 \times 10^6$ $M = 0.300$
 $C_{Lmax} = 1.56$
 $C_{Mmin} = -0.13$
 $C_{Dmax} = 0.41$

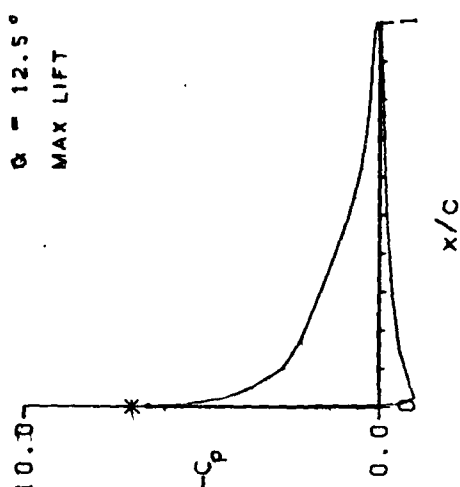
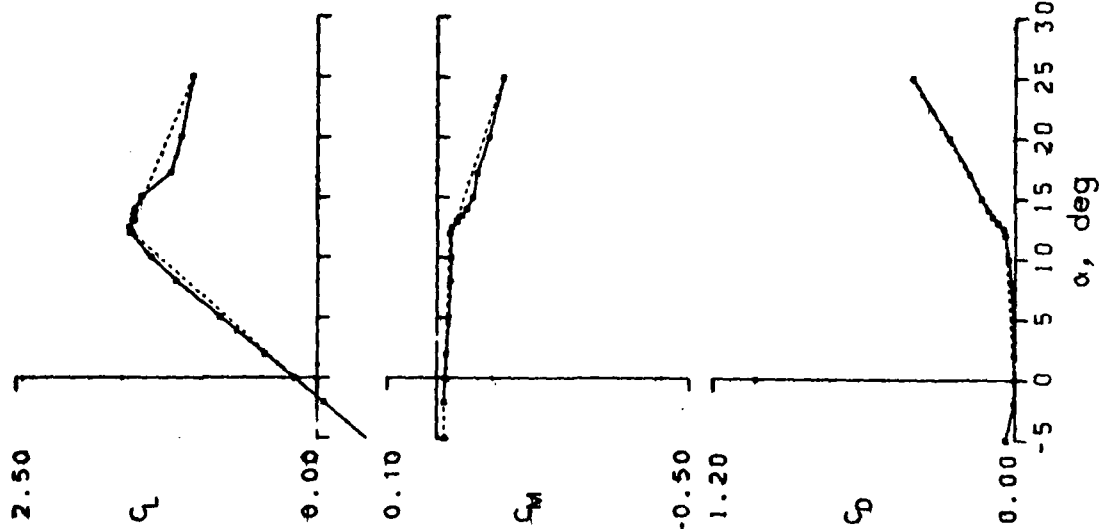


Figure 9.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

STEADY DATA--TRIP

FRAME : 46621

Re : 2.51 E6 $M = 0.183$

$C_{Lmax} = 1.38$

$C_{Mmin} = -0.10$

$C_{Dmax} = 0.28$

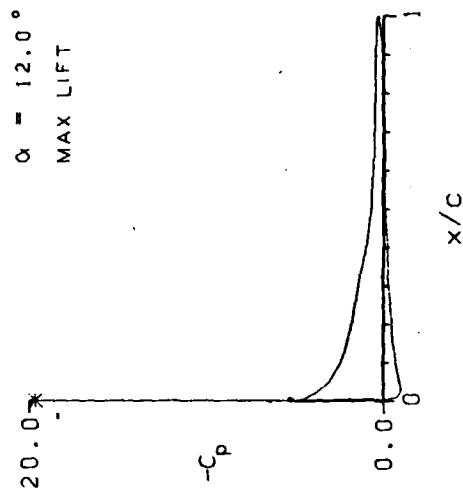
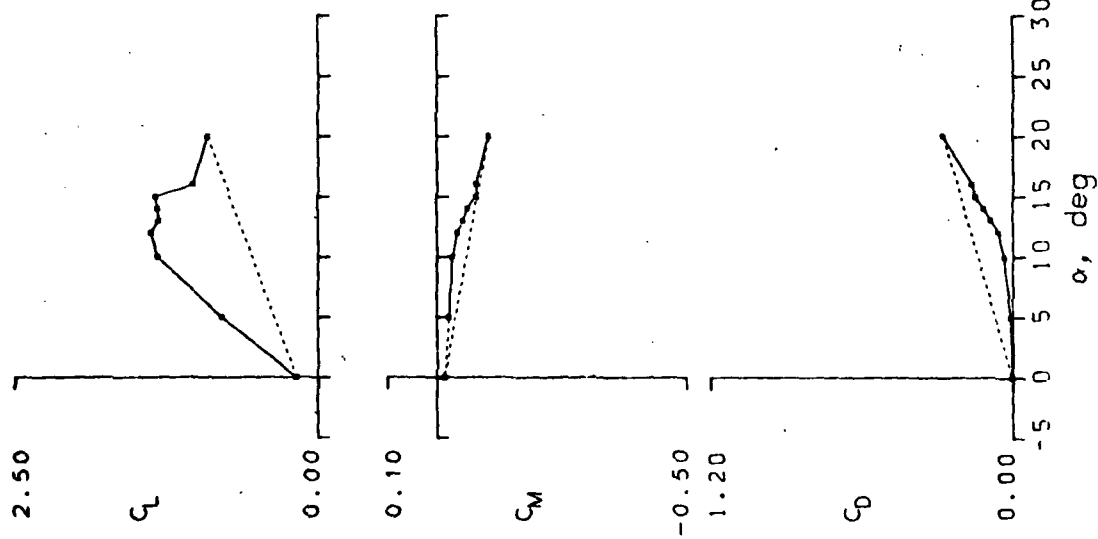


Figure 9.- Continued.

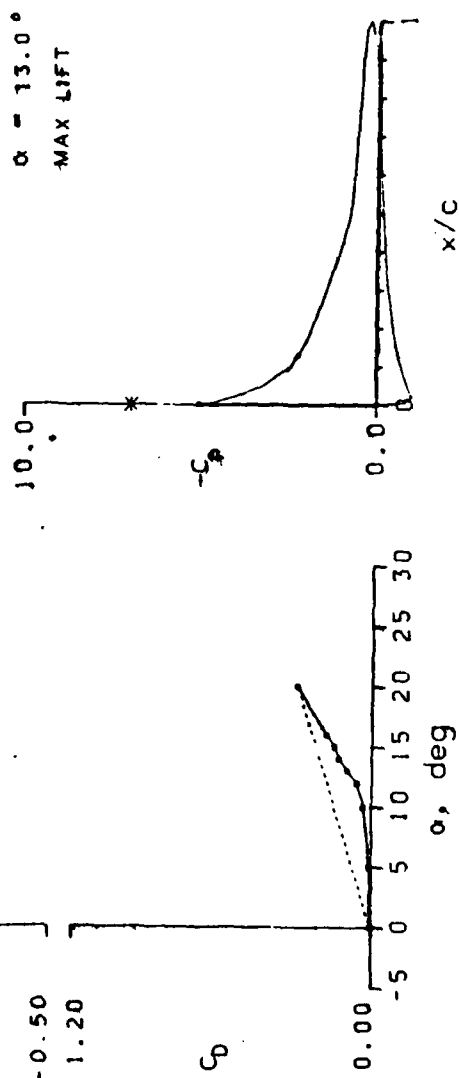
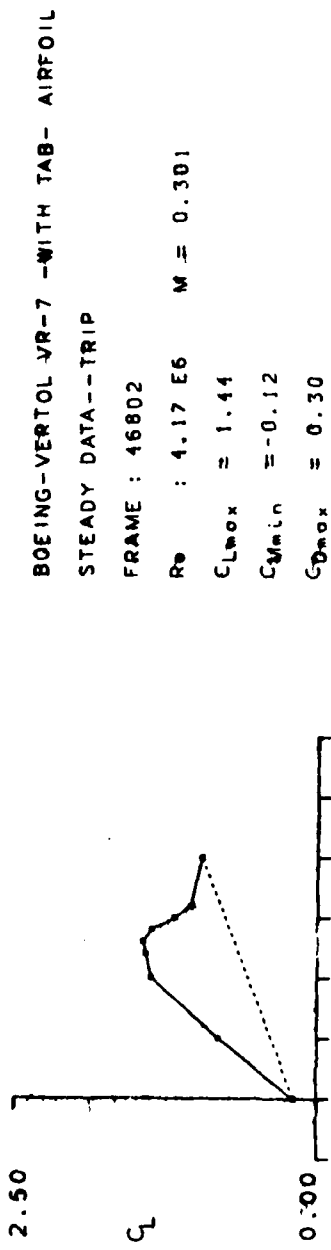


Figure 9.- Concluded.

NLR-1 AIRFOIL
 STEADY DATA
 FRAME : 61018
 $Re : 1.53 E6$ $M = 0.110$
 $C_{Lmax} = 1.41$
 $C_{Mmin} = -0.10$
 $C_{Dmax} = 0.31$

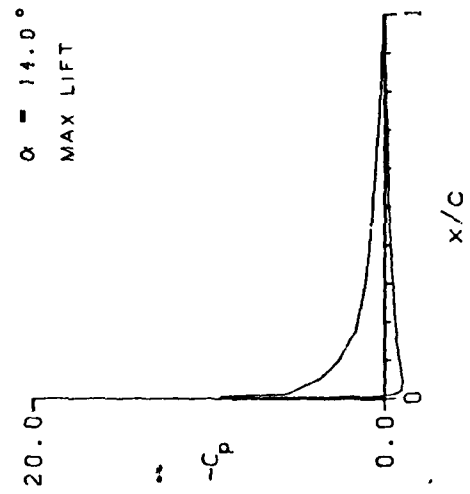
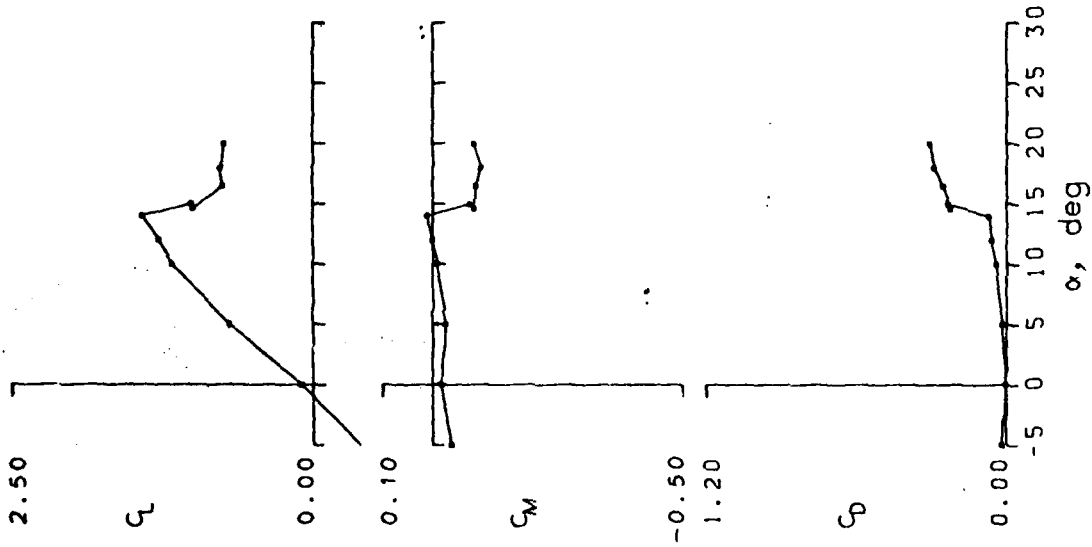


Figure 10.- Static data for NLR-1 airfoil.

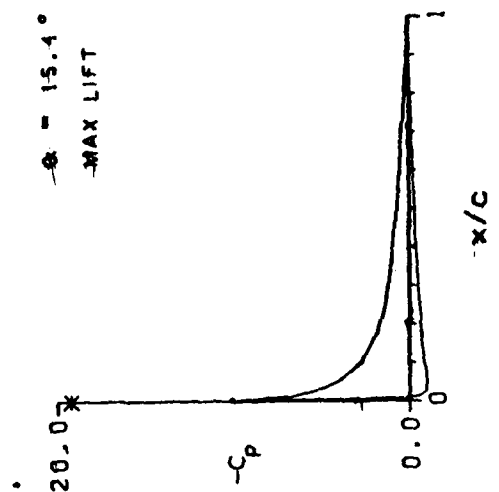
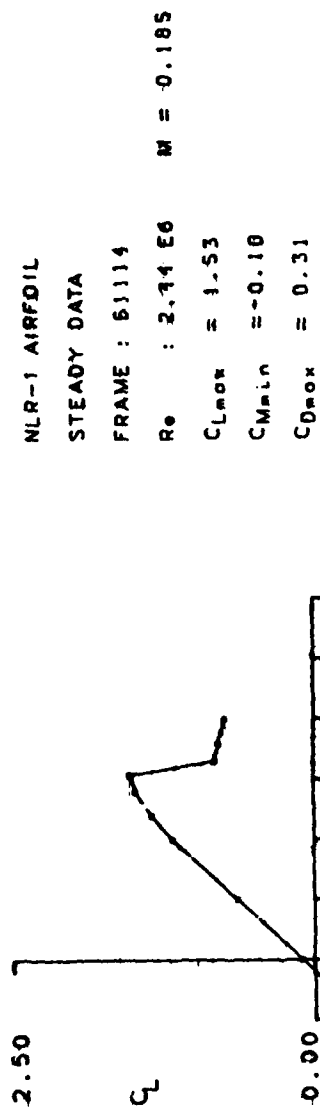


Figure 10.- Continued.

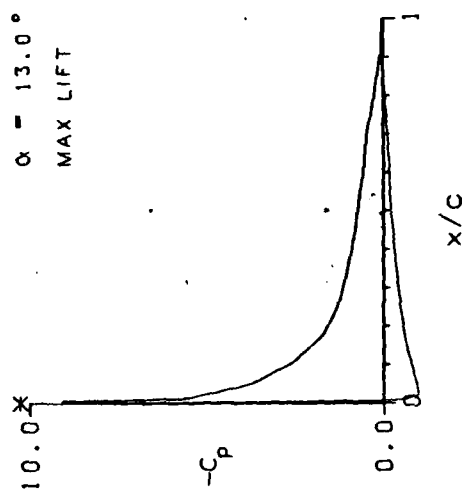
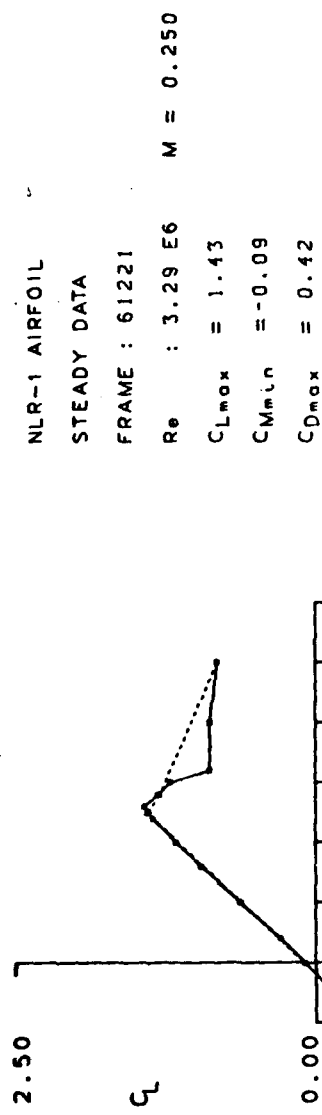


Figure 10.- Continued.

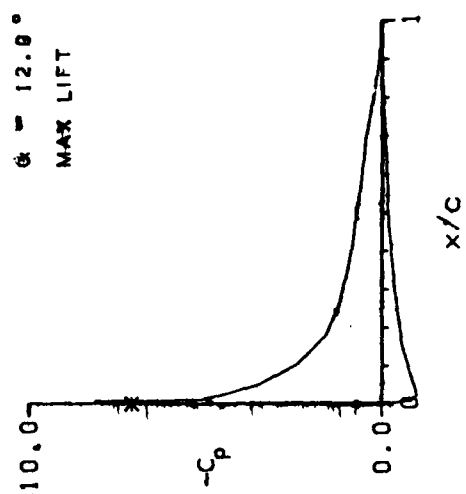
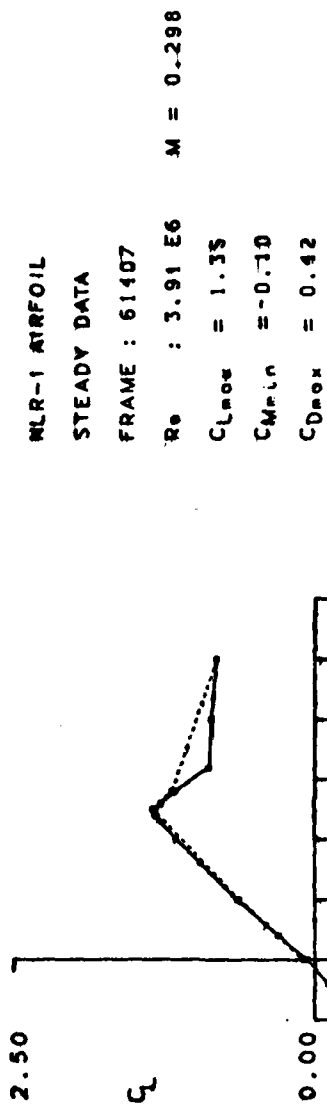


Figure 10.- Continued.

NLR-1 AIRFOIL

STEADY DATA--TRIP

FRAME : 64221

R_e : 2.35 E6 $M = 0.185$

$C_{Lmax} = 1.31$

$C_{Mmin} = -0.08$

$C_{Dmax} = 1.22$

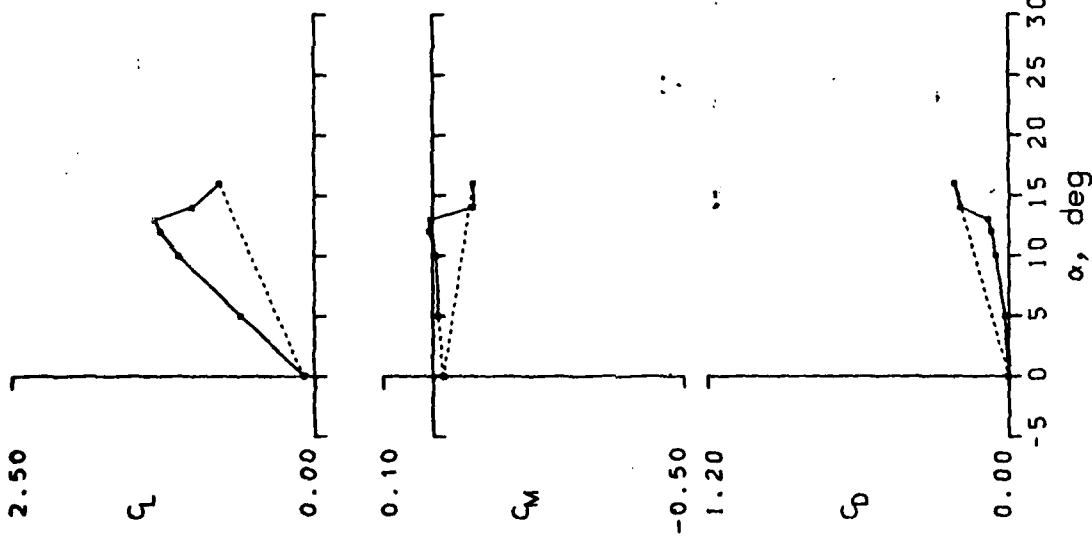


Figure 10.- Continued.

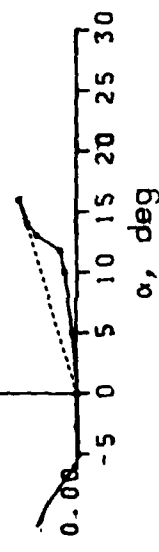
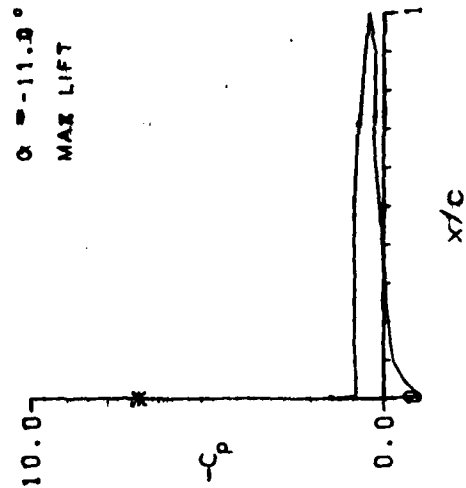
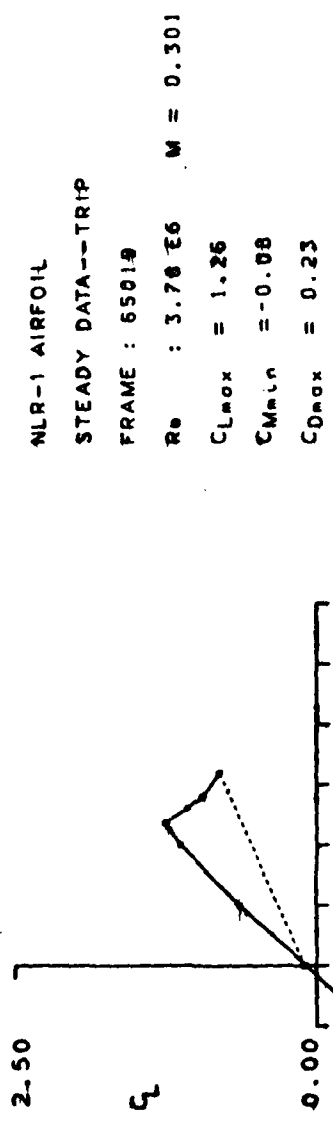


Figure 10.- Concluded.

NLR-7301 AIRFOIL

STEADY DATA

FRAME : 66019

Re : 3.88 E6 M = 0.293

$C_{Lmax} = 1.88$

$C_{Mmin} = -0.10$

$C_{Dmax} = 0.21$

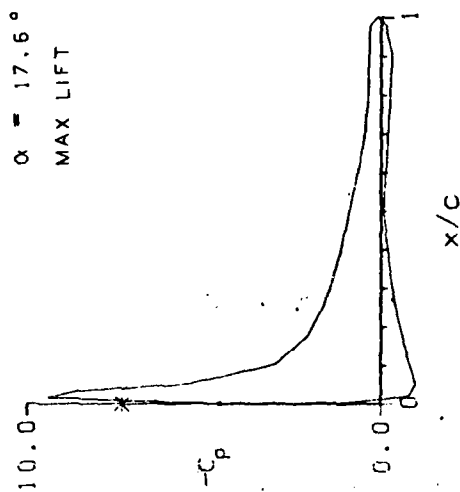
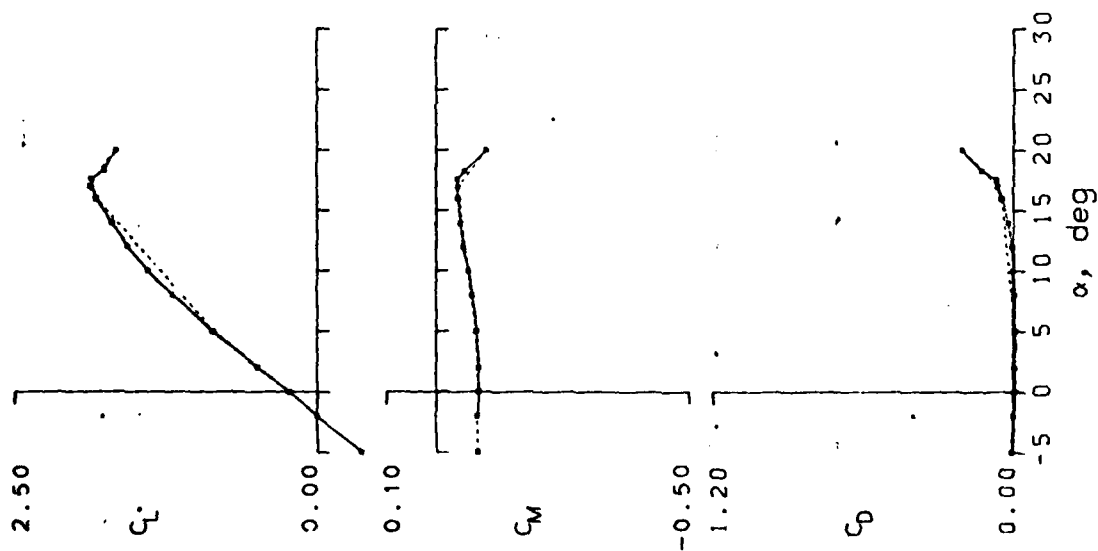


Figure 11.- Static data for NLR-7301 airfoil.

NLR-7301 AIRFOIL
 STEADY DATA
 FRAME : 66214
 Re : 3.26 E6 M = 0.248
 $C_{Lmax} = 1.86$
 $C_{Mmin} = -0.20$
 $C_{Dmax} = 0.48$

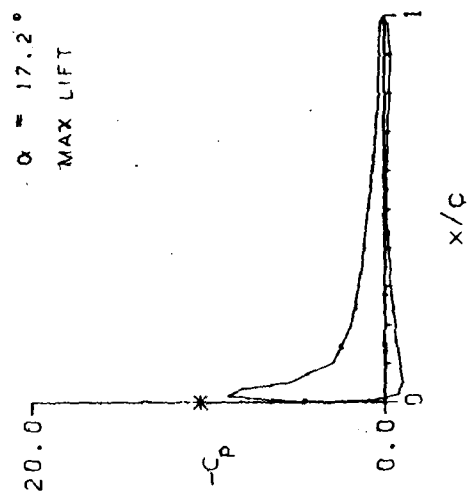
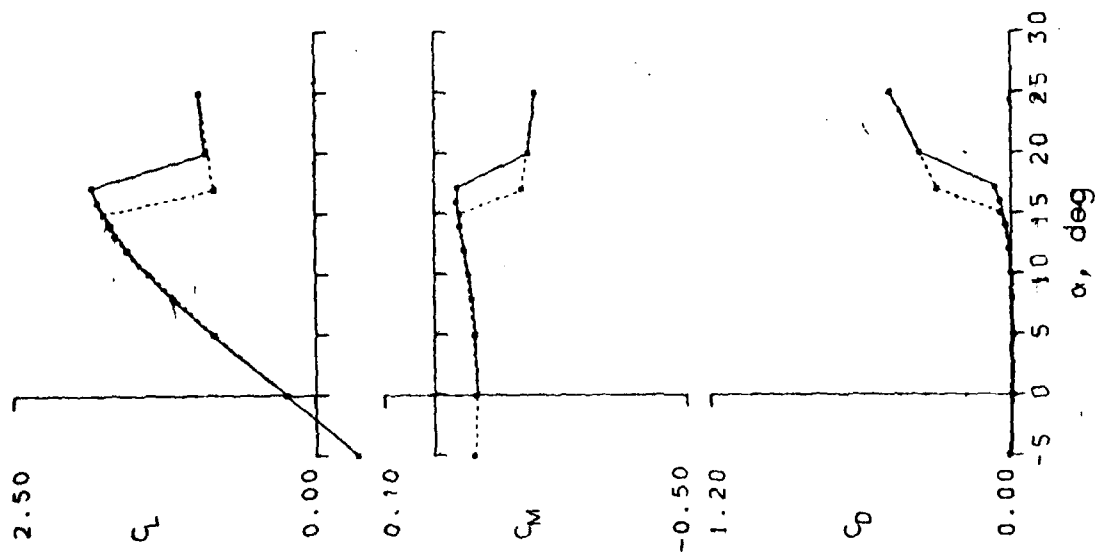


Figure 11.- Continued.

NLR-7301 AIRFOIL
 STEADY DATA
 FRAME : 66320
 $Re : 2.46 E6$ $M = 0.183$
 $C_{Lmax} = 1.83$
 $C_{Mmin} = -0.17$
 $C_{Dmax} = 0.46$

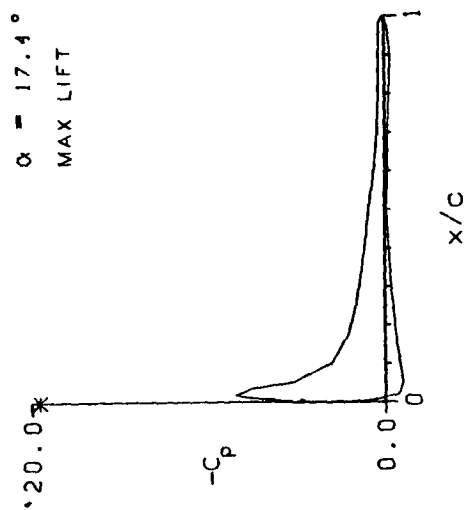
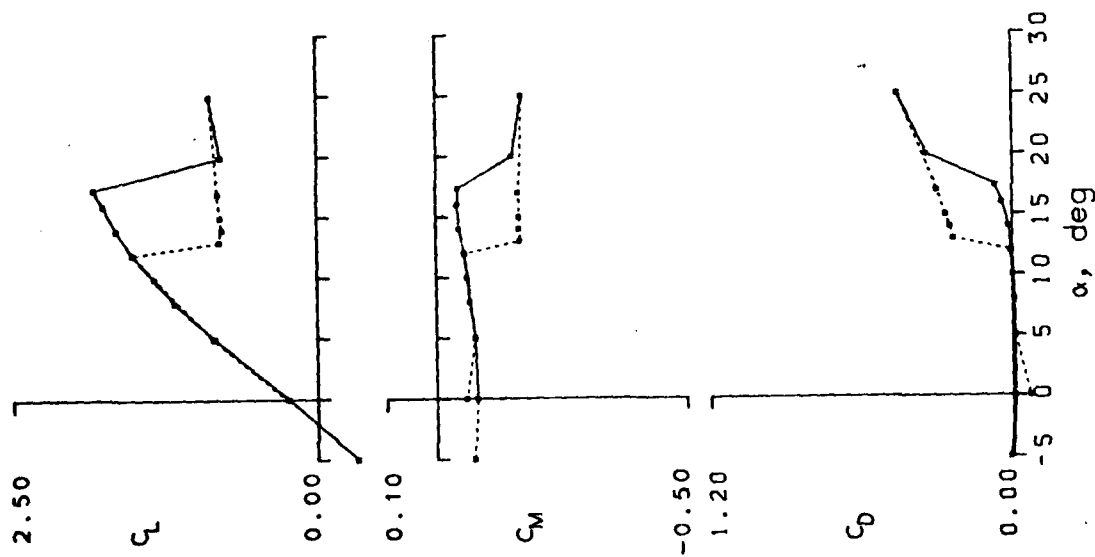


Figure 11.- Continued.

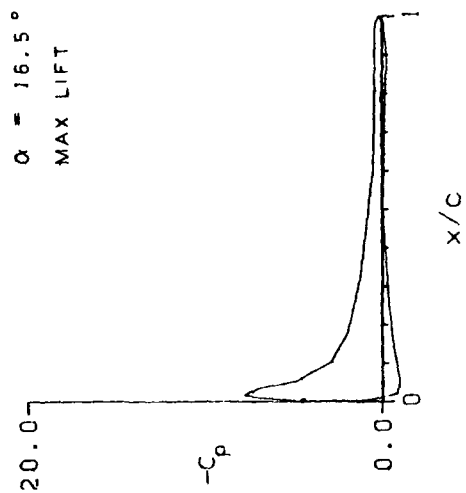
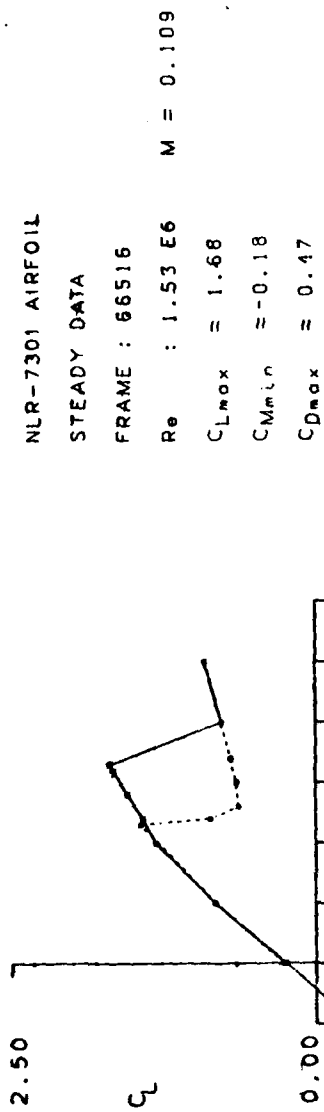


Figure 11.- Continued.

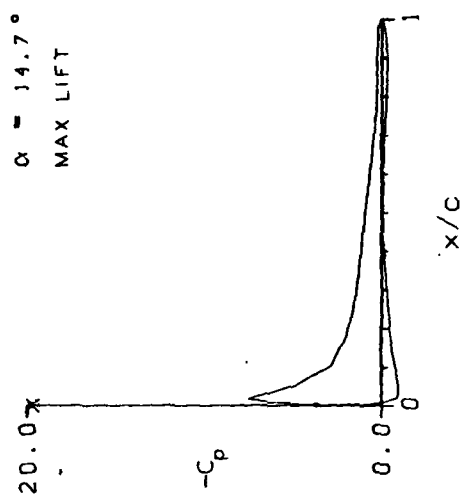
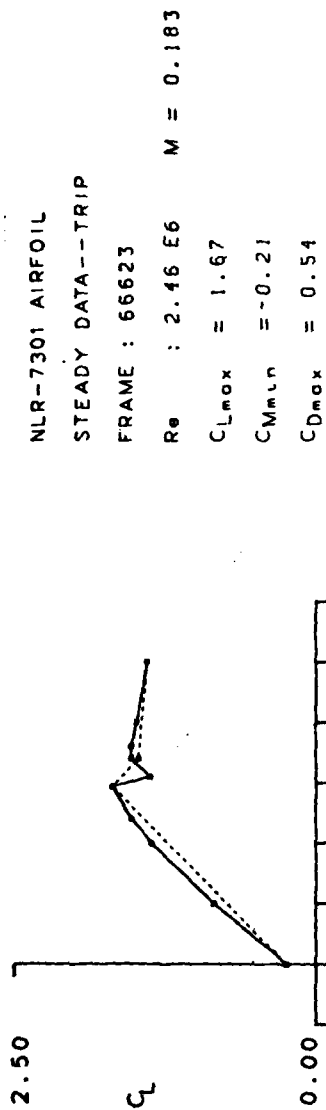


Figure 11.- Continued.

NLR-7301 AIRFOIL
 STEADY DATA--TRIP
 FRAME : 66810
 $Re : 3.91 E6$ $M = 0.297$
 $C_{Lmax} = 1.64$
 $C_{Mmin} = -0.09$
 $C_{Dmax} = 0.02$

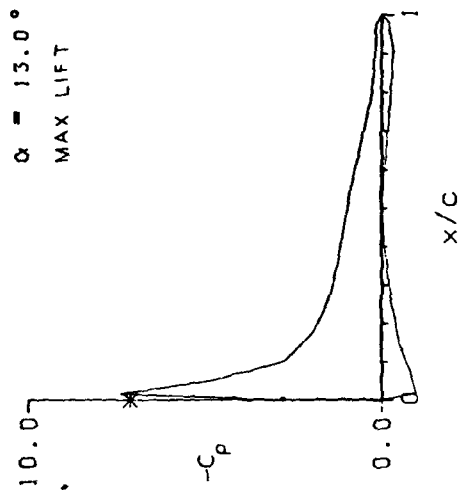
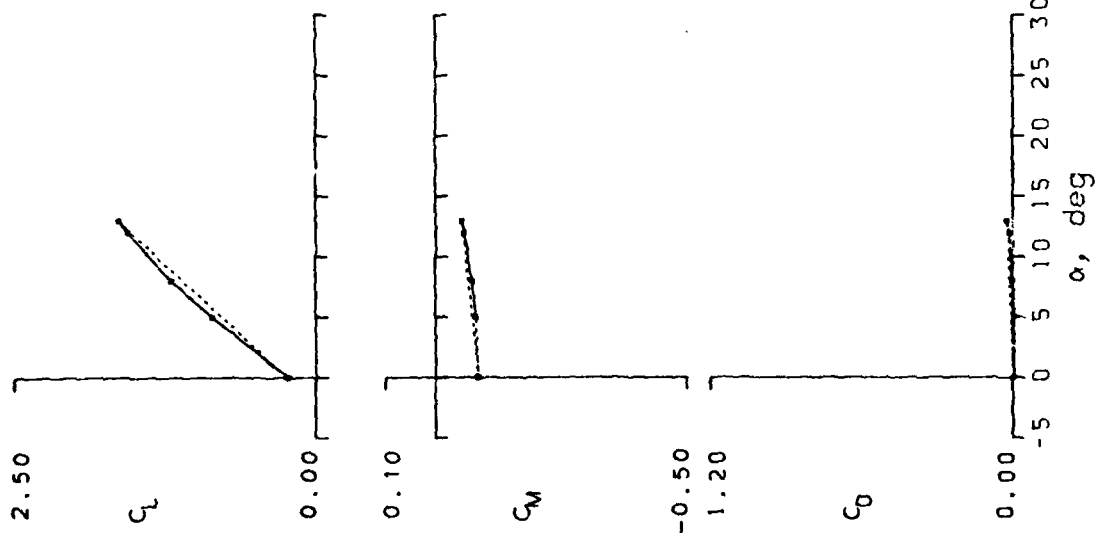


Figure 11.- Concluded.

NACA 0012 AIRFOIL

FRAME : 7019	A0 = 8.99°	k = 0.051
Re = 3.89 E6	A1 = 4.91°	M = 0.297
CLmax = 1.44	CMmin = 0.00	CDmax = 0.07
αLmax = 13.5°	ξ = 0.094	Mmax = 1.234
αCmin = 8.9°	-CDmax = 9.1	αMmax = 13.7°

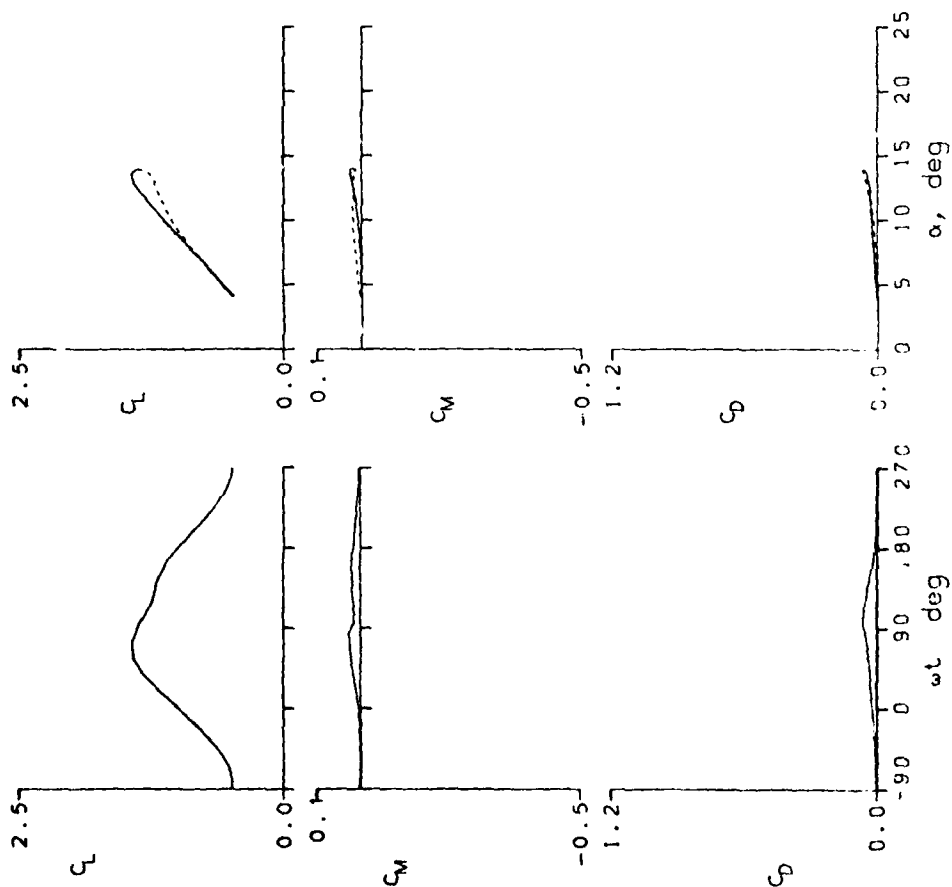


Figure 12.- dynamic data for NACA 0012 airfoil.

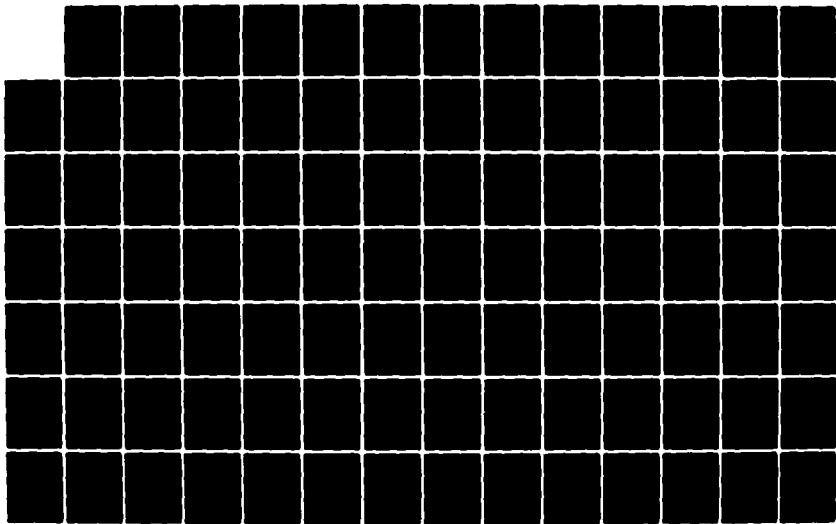
AD-A121 598

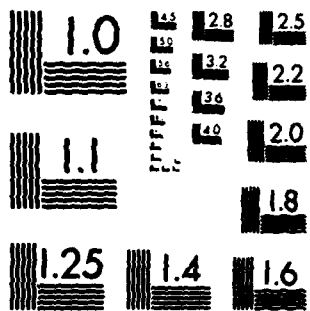
AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED
AIRFOIL SECTIONS VOLUM. (U) NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION MOFFETT FIELD CALIF.

UNCLASSIFIED K W MCALISTER ET AL. SEP 82

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NATIONAL BUREAU OF STANDARDS 1963 A

NACA 0012 AIRFOIL
 FRAME : 7021 $\alpha_0 = 8.99^\circ$ $k = 0.100$
 $Re = 3.55 \text{ E}6$ $A1 = 4.91^\circ$ $M = 0.299$
 $C_{Lmax} = 1.48$ $C_{Mmax} = -0.09$ $C_{Dmax} = 0.16$
 $\alpha_{Lmax} = 13.8^\circ$ $\zeta = -0.193$ $M_{max} = 1.238$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 13.7^\circ$

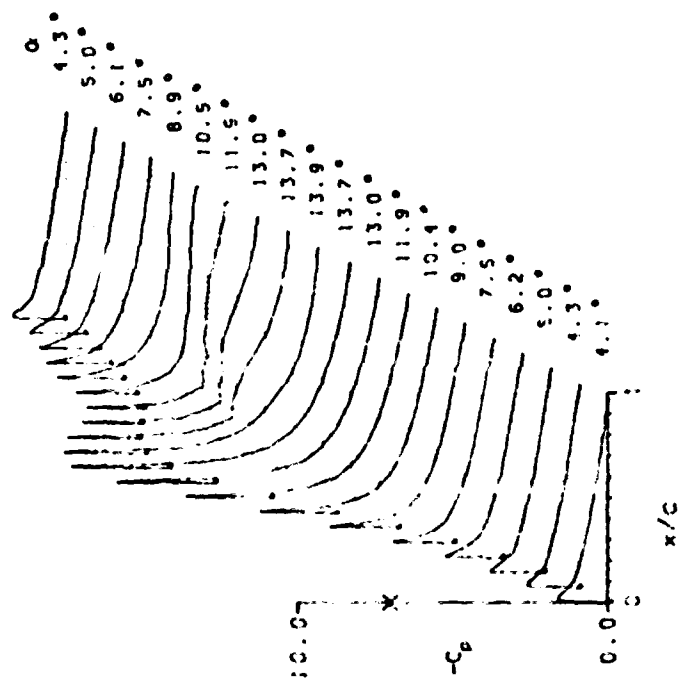
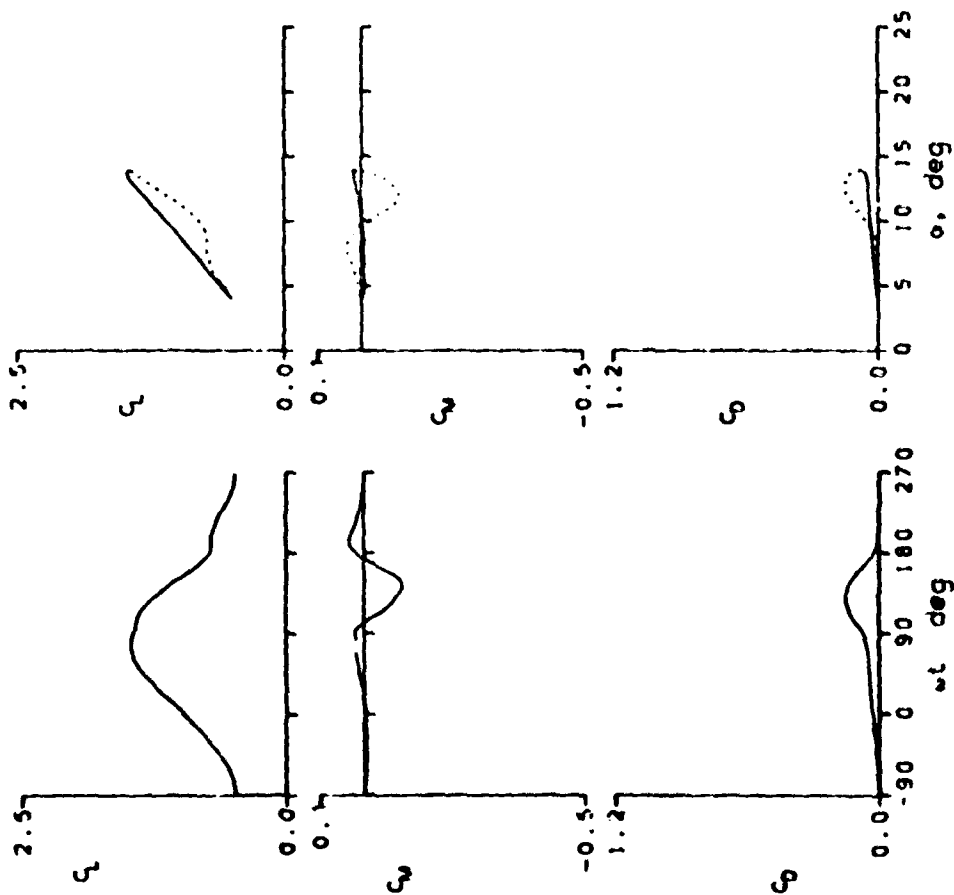


Figure 12.- Continued.

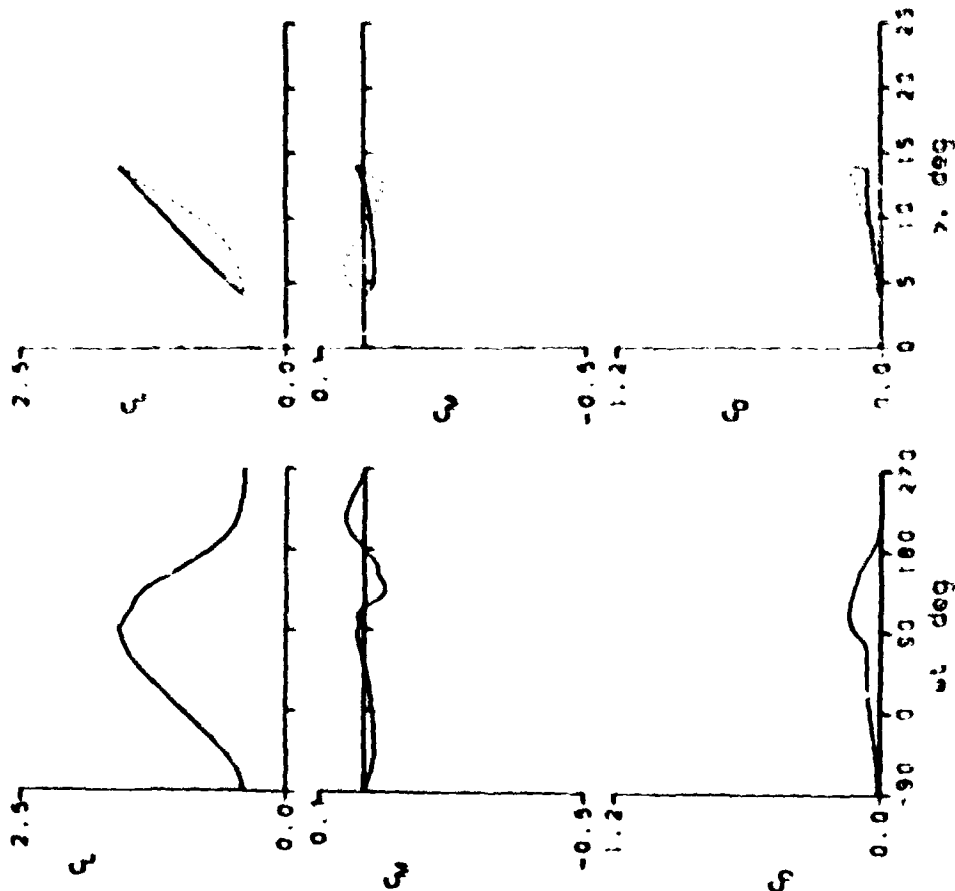


Figure 12. - Continued.

NACA 0012 AIRCRAFT
 FRAME 1212
 $\alpha_0 = 9.9166^\circ$ $A_0 = 0.09^\circ$ $\alpha = 0.150$
 $\Gamma_{max} = 1.12$ $C_{max} = 0.05$ $C_{Dmax} = 0.12$
 $\phi_{max} = 17.9^\circ$ $\Gamma = 0.076$ $\phi_{max} = 1.245$
 $\phi_{min} = 0.0^\circ$ $\phi_{max} = 0.2$ $\phi_{max} = 13.0^\circ$

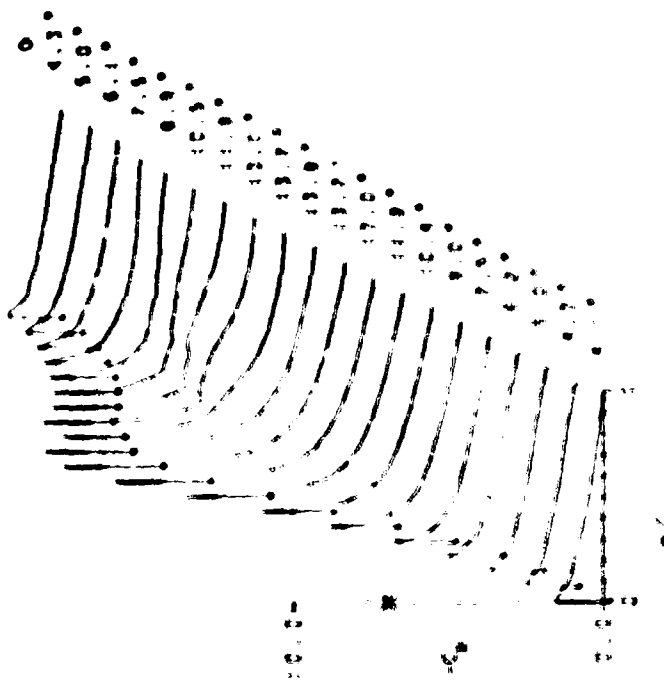
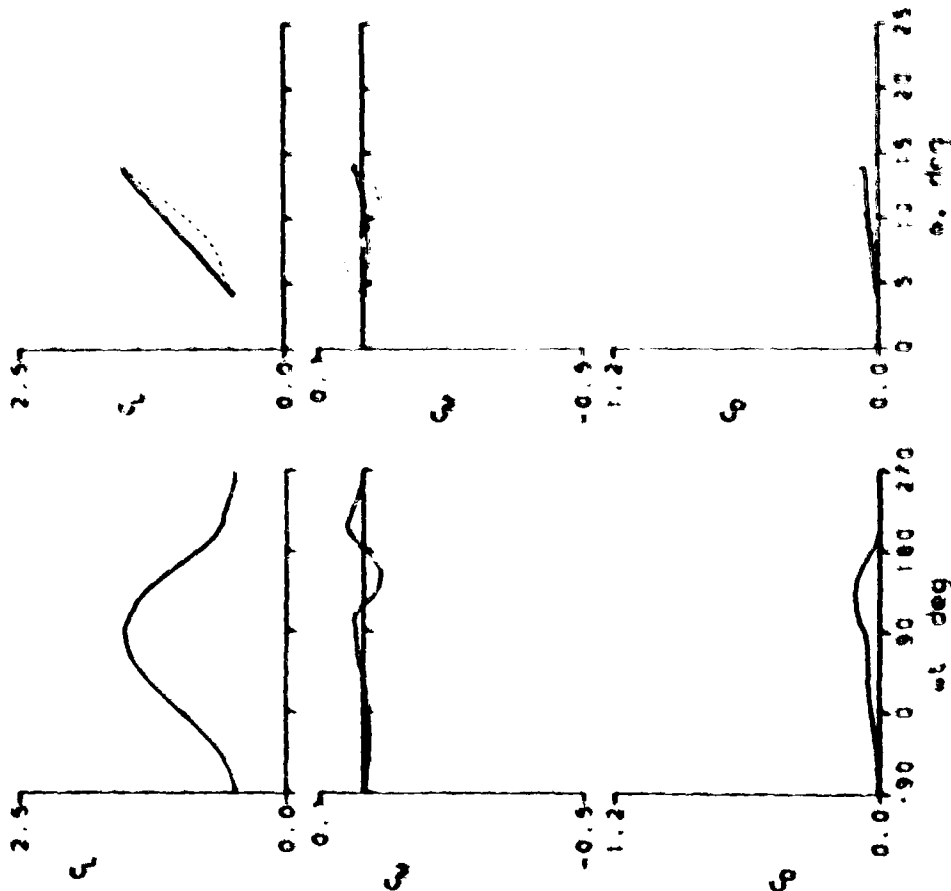


Figure 12.- Continued.

NACA 0012 at 800

Reynolds	7.0E6	At	0.97	0	0.025
Angle	0	At	0.00	0	0.301
Cl	0.0	At	0.00	0	0.05
Clmax	0.0	At	0.00	0	1.215
Clmax	0.0	At	0.00	0	13.0

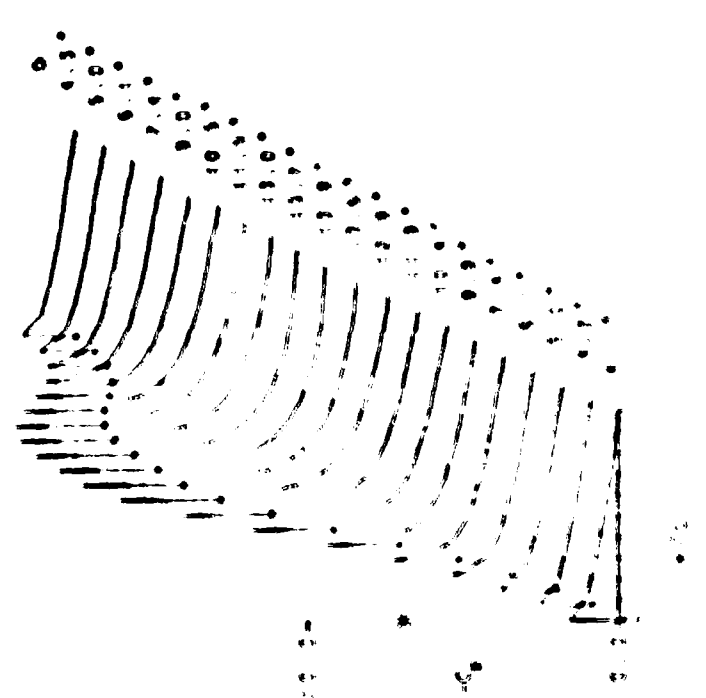
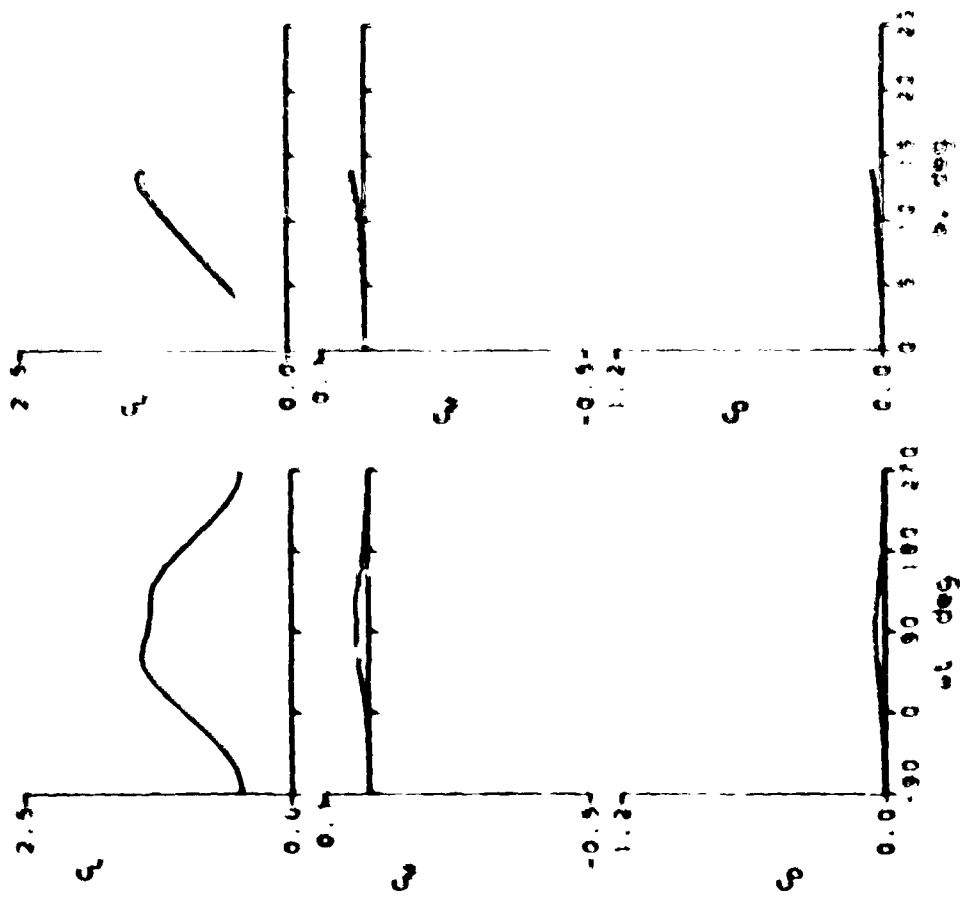


Figure 12.- Continued.

DATA 121 A 840 -

NAME	AD	2 97	0	0.100
AP	5 43 14	AD	2 97	0
CP	05	CP	2 97	0
DP	12 3	DP	2 97	0
EP	12 3	EP	2 97	0

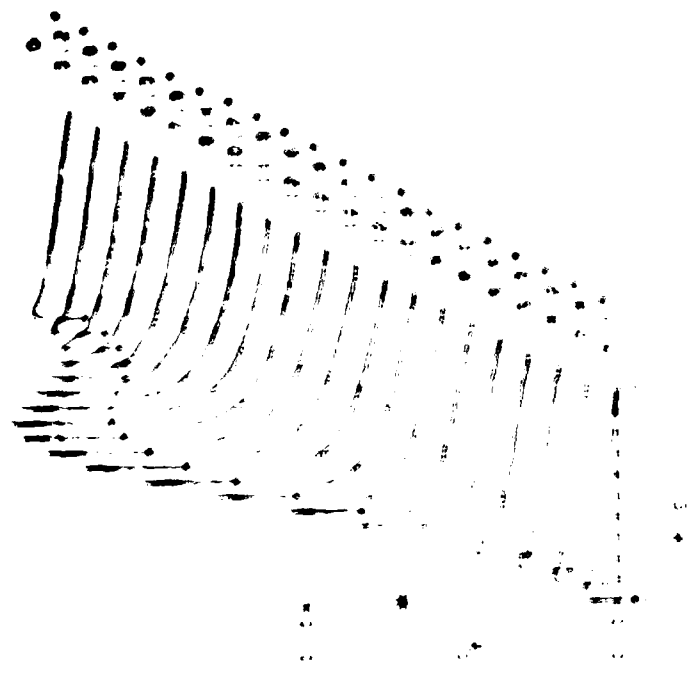
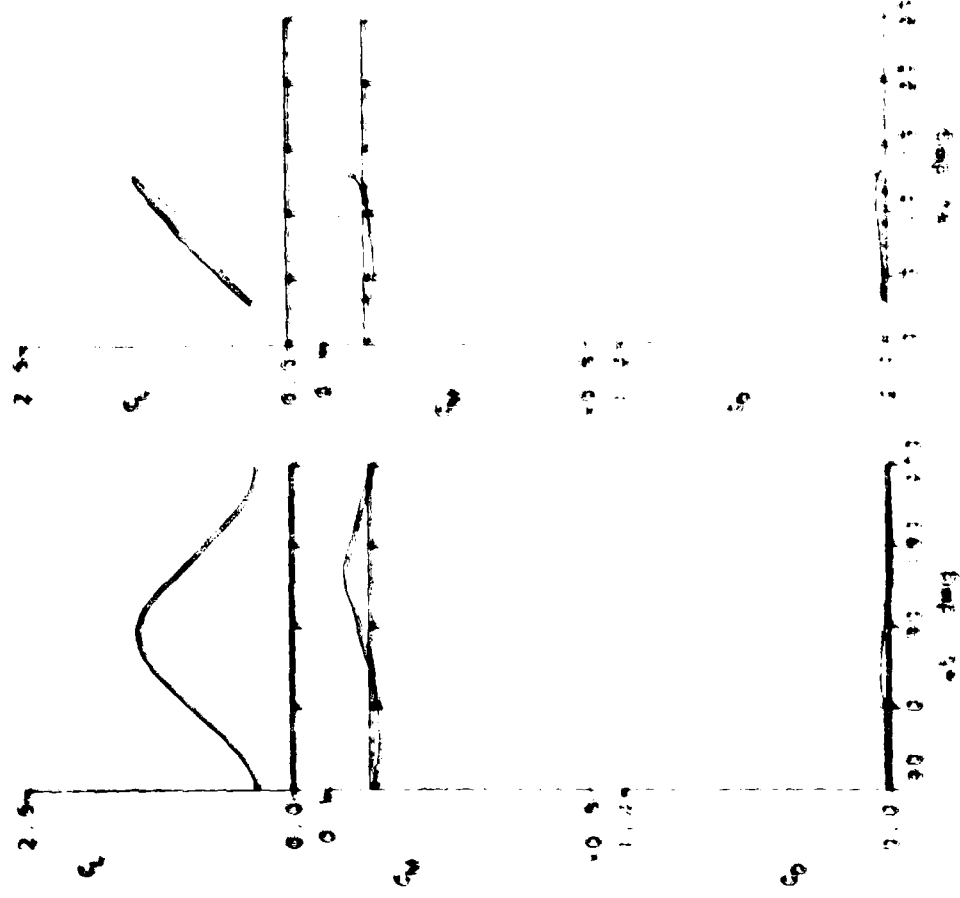
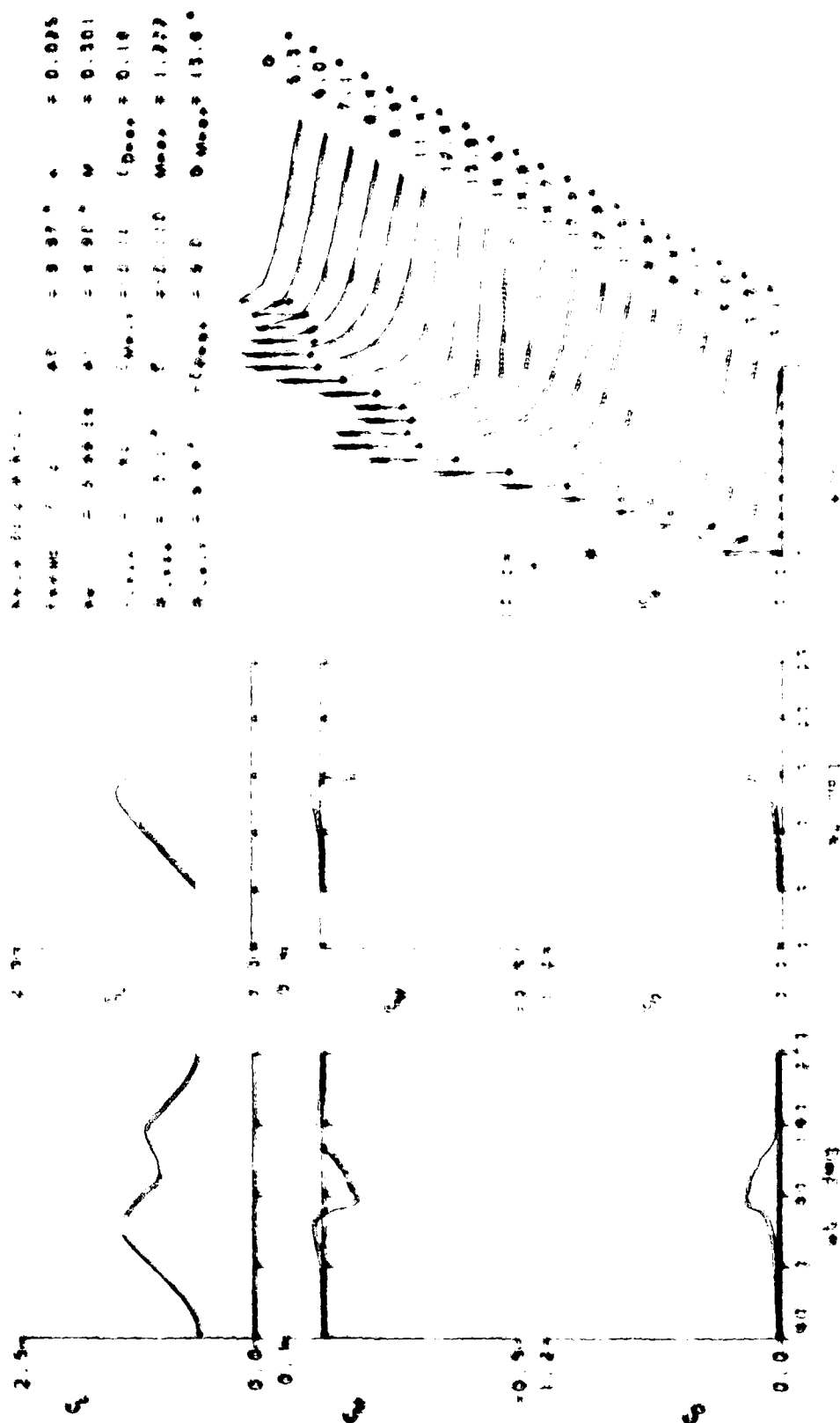


Figure 12 - (Cont'd)



Pennsylvania

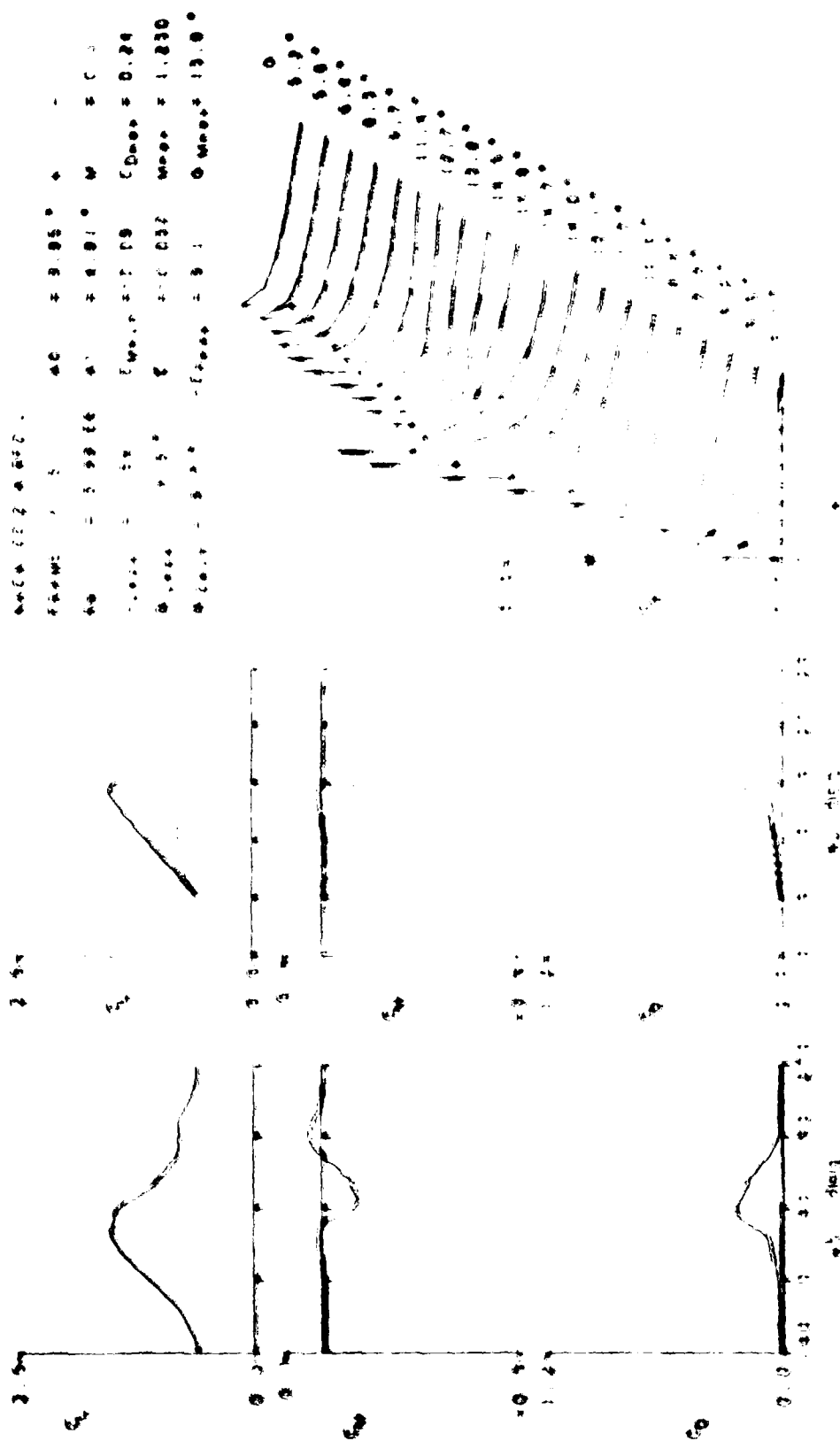
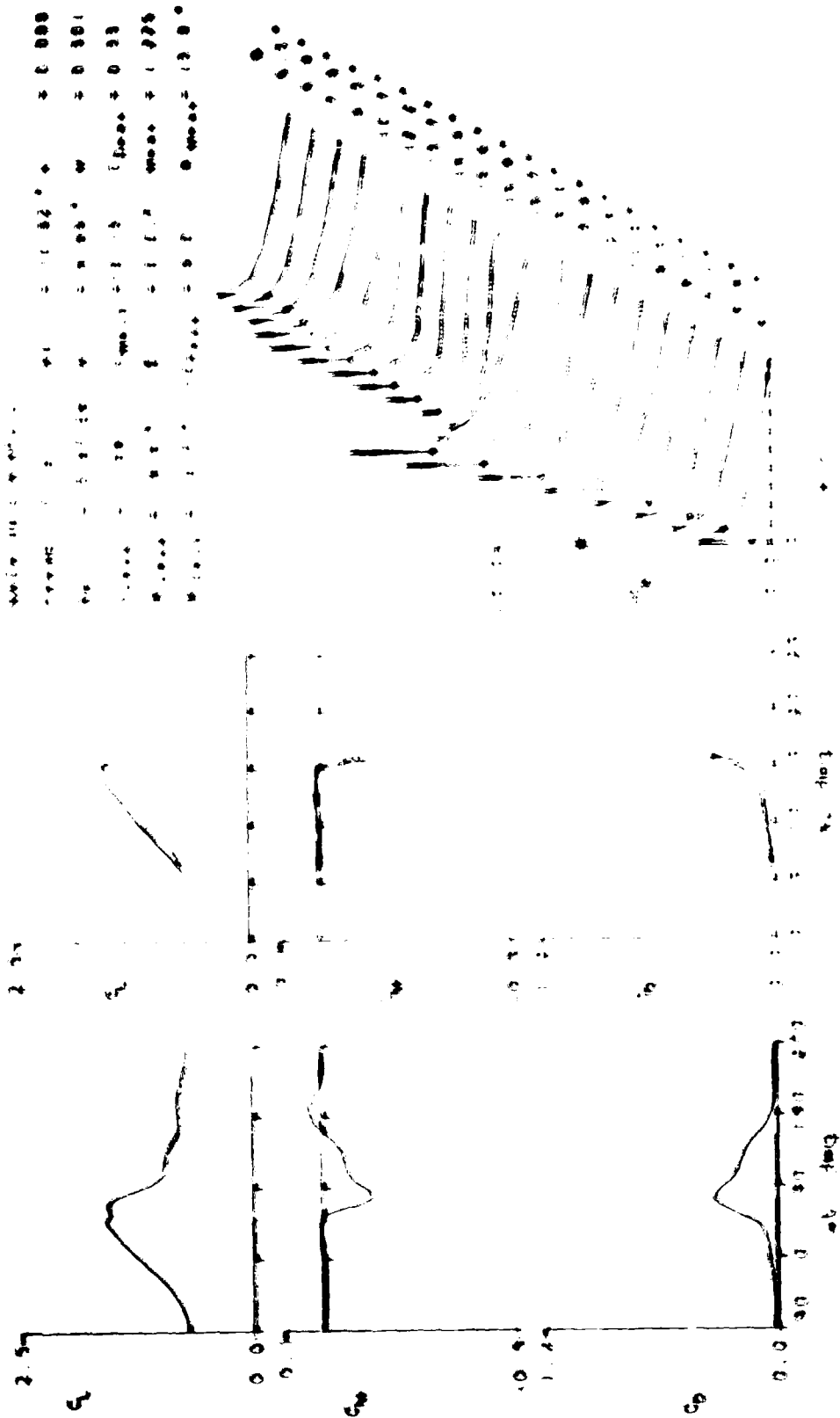


Figure 10-16

Figure 10 - 11. Results



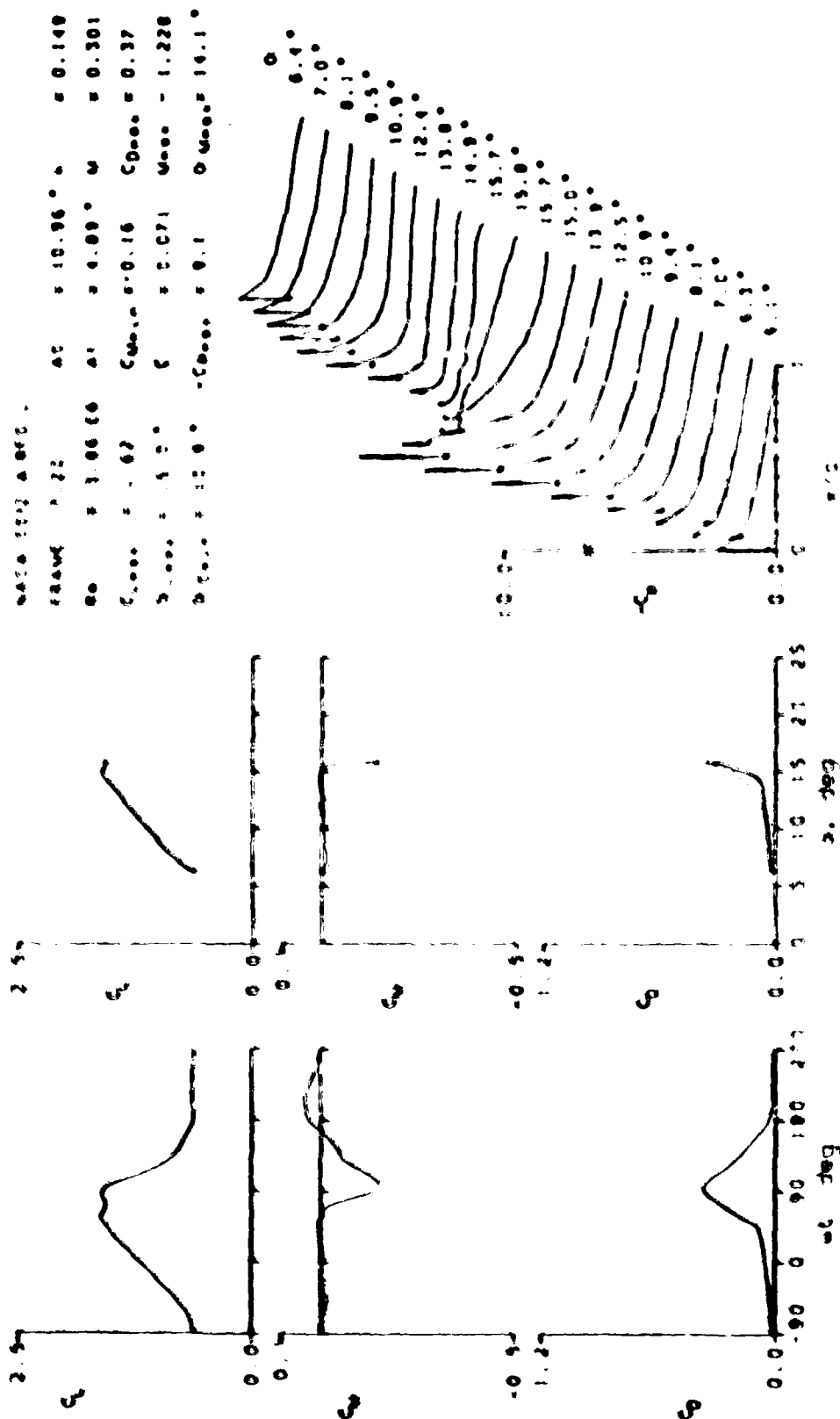


Figure 12.- Continued.

NACA 0012 AERO-L
 FRAME : 7:2:1 $\Delta\theta = 10.00^\circ$ $\alpha = 0.100$
 $B_0 = 3.05 \text{ E6}$ $\Delta\theta = 4.00^\circ$ $\alpha = 0.301$
 $C_{L_{max}} = 1.72$ $C_{M_{max}} = 0.29$ $C_{D_{max}} = 0.43$
 $\alpha_{max} = 15.0^\circ$ $C_L = 0.116$ $M_{max} = 1.218$
 $\alpha_{C_{L_{max}}} = 10.5^\circ$ $-C_{D_{max}} = 9.0$ $\alpha_{M_{max}} = 14.1^\circ$

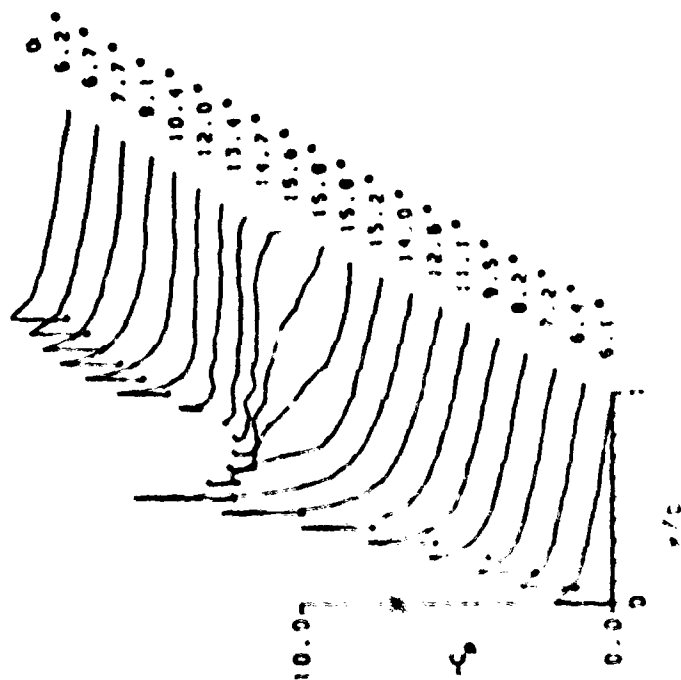
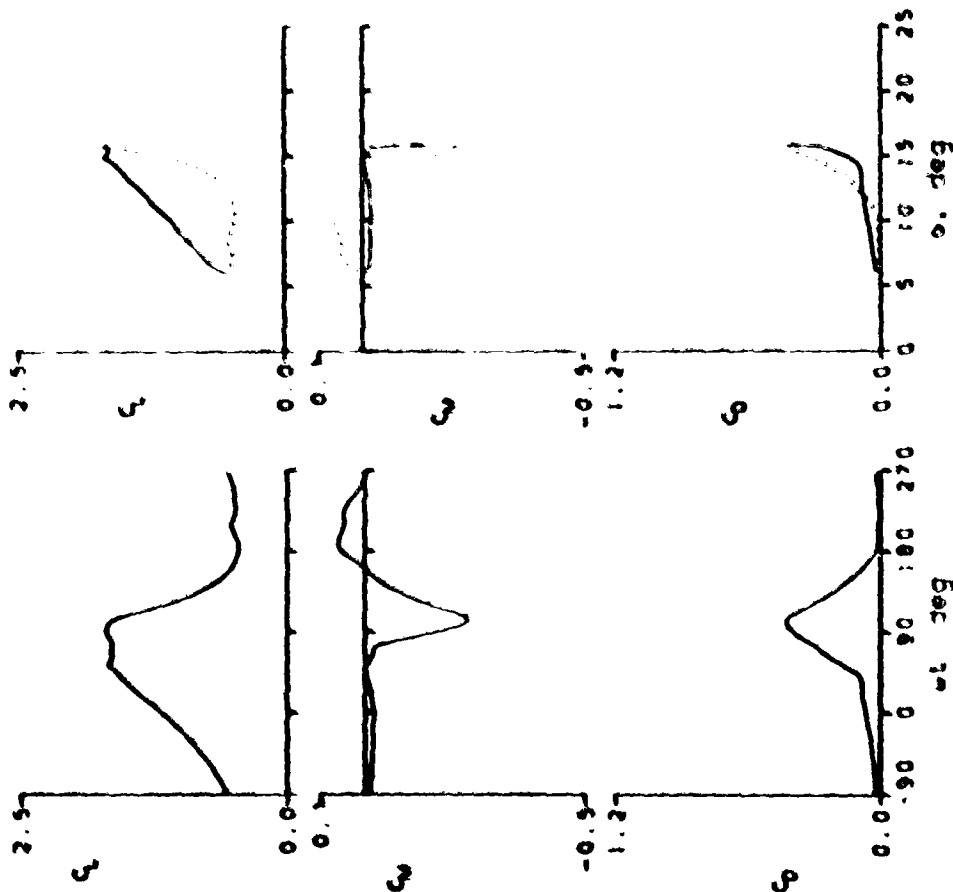


Figure 12.- Continued.

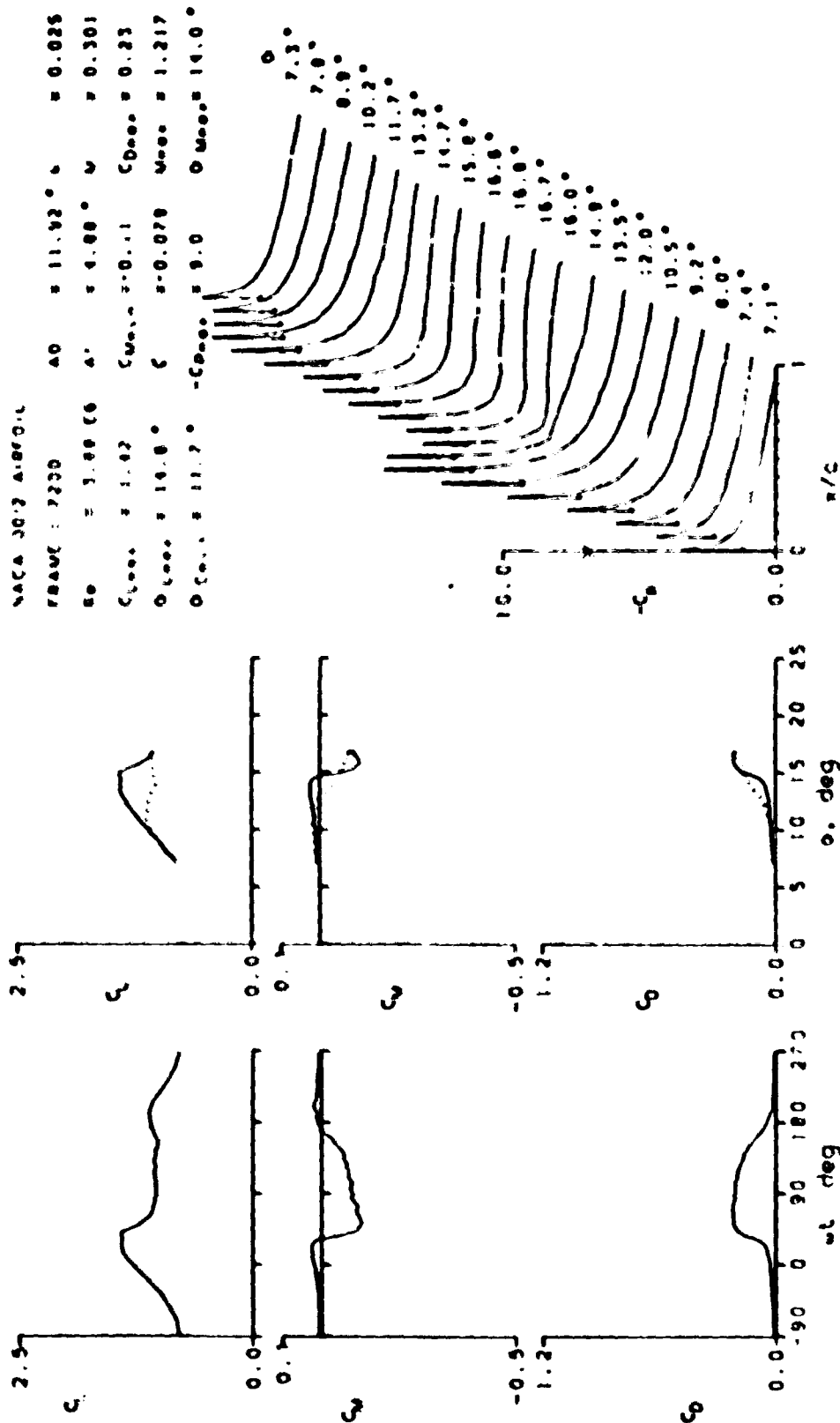


Figure 12.- Continued.

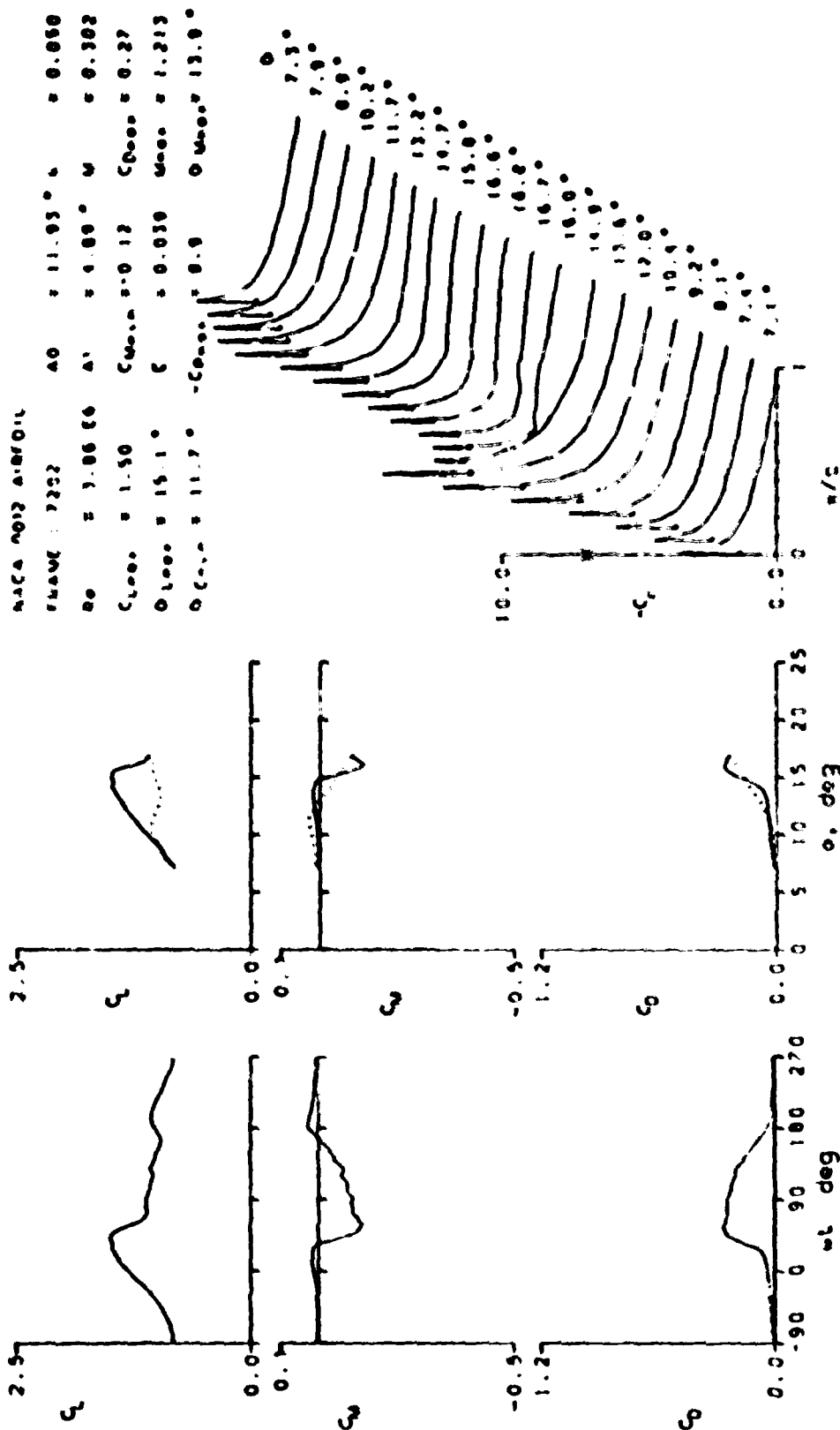


Figure 12.- Continued.

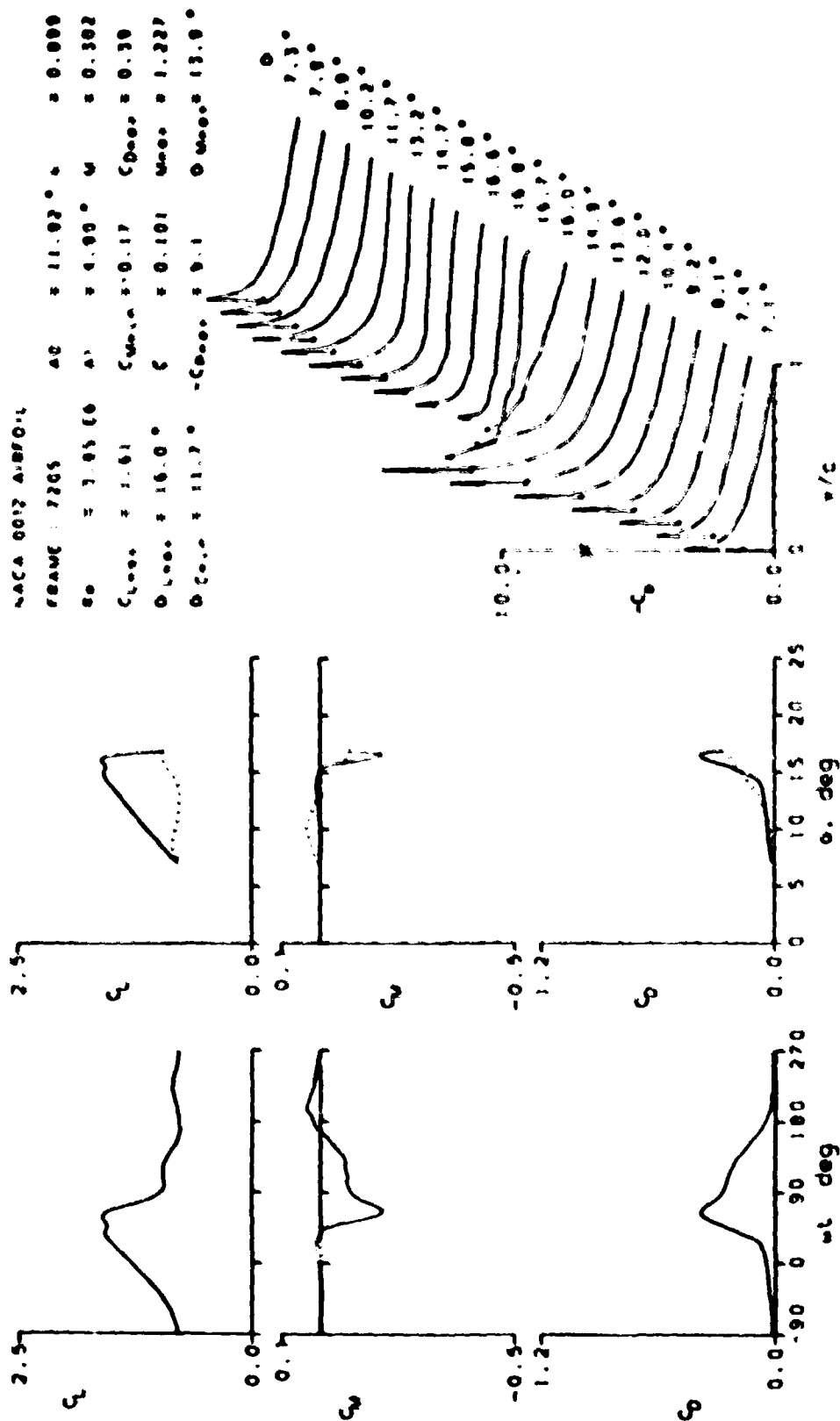


Figure 12.- Continued.

NACA 0012 Aerofoil
 Re = 3.95E6 $\Delta\theta = 11.00^\circ$ $\Delta\theta = 0.100$
 $\Delta\theta = 3.95E6$ $\Delta\theta = 11.00^\circ$ $\Delta\theta = 0.100$
 $C_{L,000} = 1.01$ $C_{M,000} = 0.20$ $C_{L,000} = 0.90$
 $C_{L,000} = 16.0^\circ$ $C_{L,000} = 0.200$ $C_{L,000} = 1.221$
 $C_{M,000} = 11.5^\circ$ $C_{M,000} = 0.0$ $C_{M,000} = 14.6^\circ$

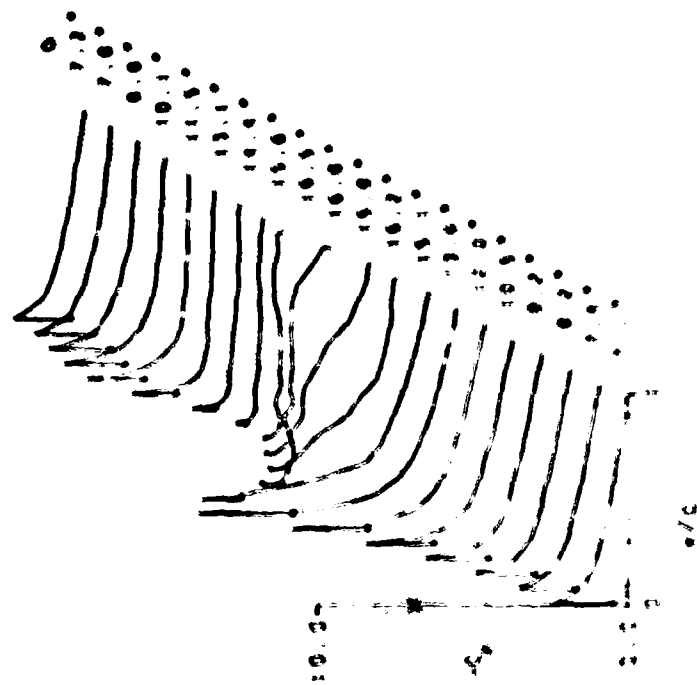
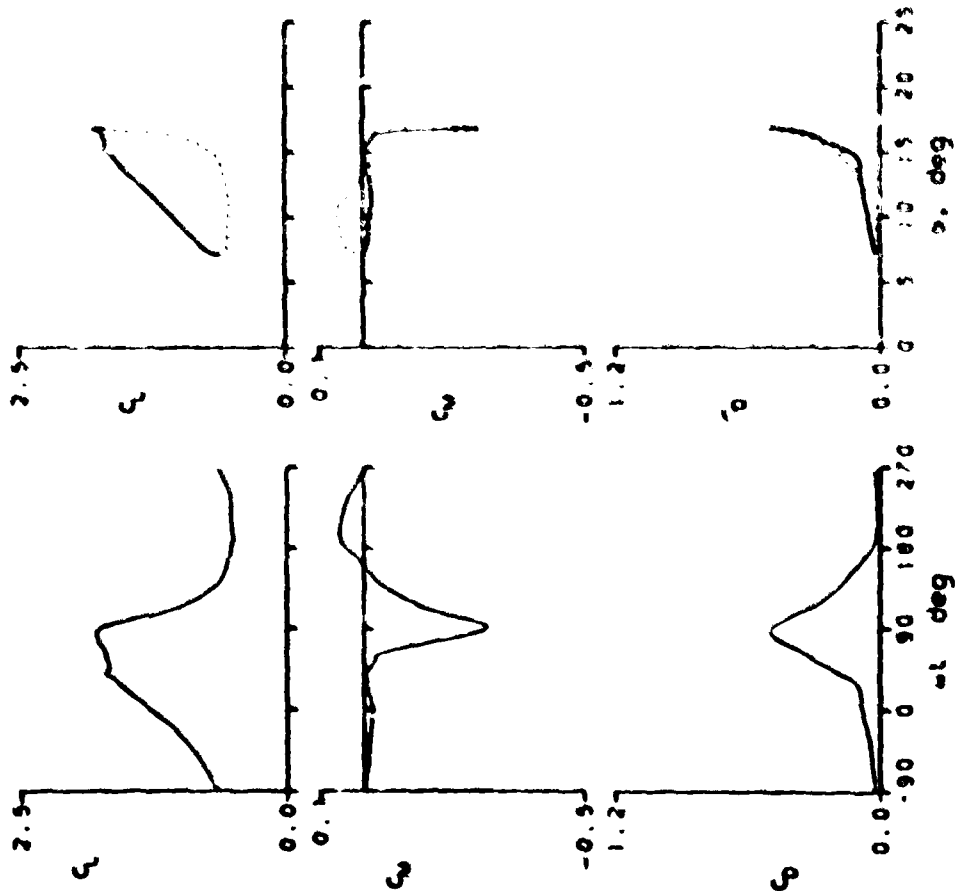


Figure 12.- Continued.

DATA CONT. 4-24-64
 PARAMETER: $\alpha_0 = 0.71^\circ$ $\alpha = 0.100$
 $\beta_0 = 3.0656$ $\beta = 4.98^\circ$ $\beta = 0.302$
 $C_{L,0} = 1.49$ $C_{L,0.0} = 0.02$ $C_{L,0.0} = 0.07$
 $D_{L,0.0} = 13.75$ $D_{L,0.0} = 0.325$ $D_{L,0.0} = 1.251$
 $D_{C,0.0} = 0.00$ $D_{C,0.0} = 0.1$ $D_{C,0.0} = 13.0$

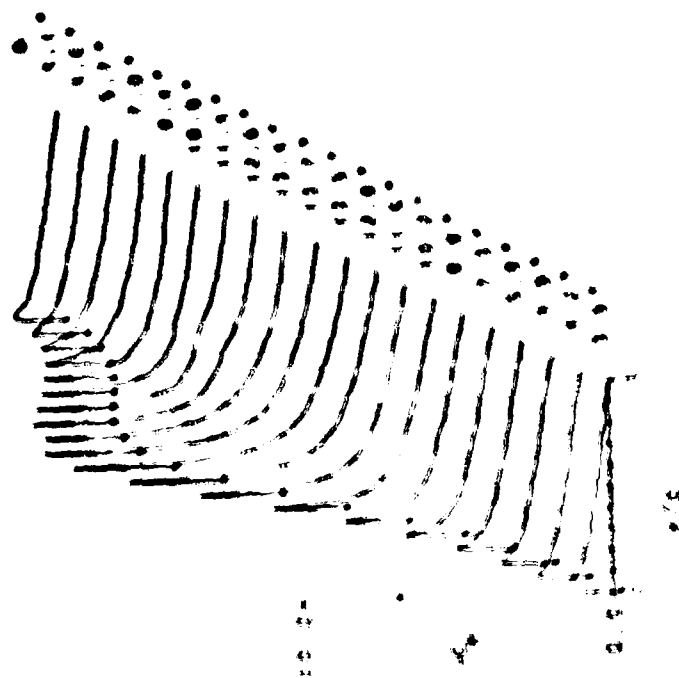
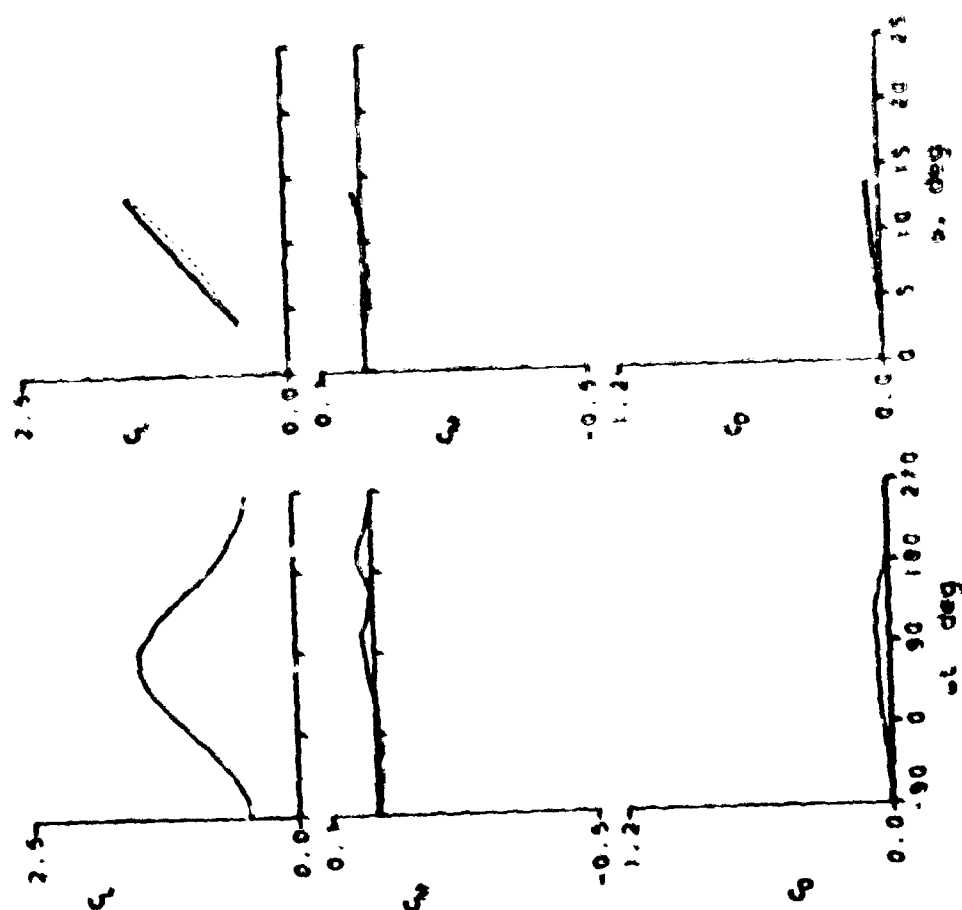


Figure 12.- Continued.

DATA 1973 0.0000
 FRAME 12.0 0.0 0.0000
 00 0.0000 0.0000 0.0000
 1.0000 0.0000 0.0000
 0.0000 0.0000 0.0000
 0.0000 0.0000 0.0000

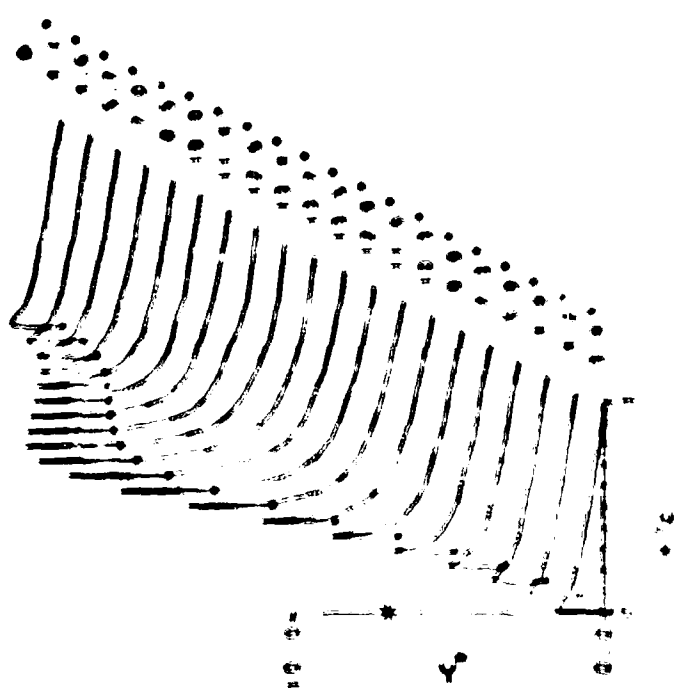
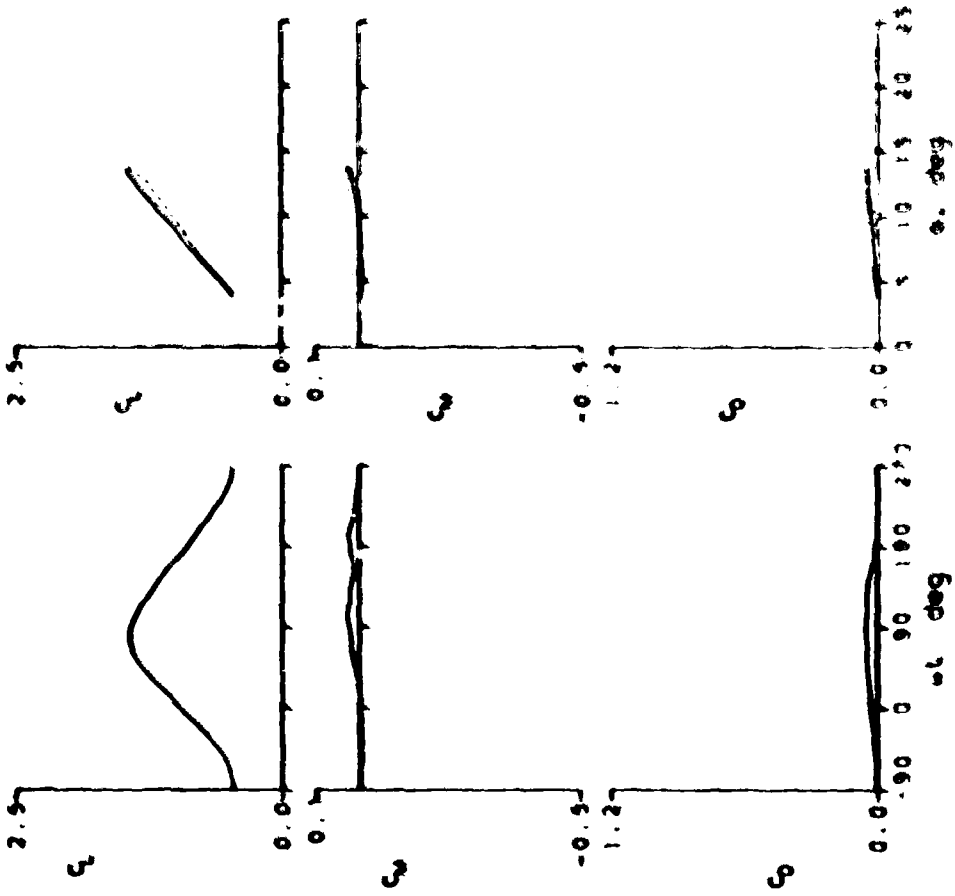


Figure 12. - Curved blade.

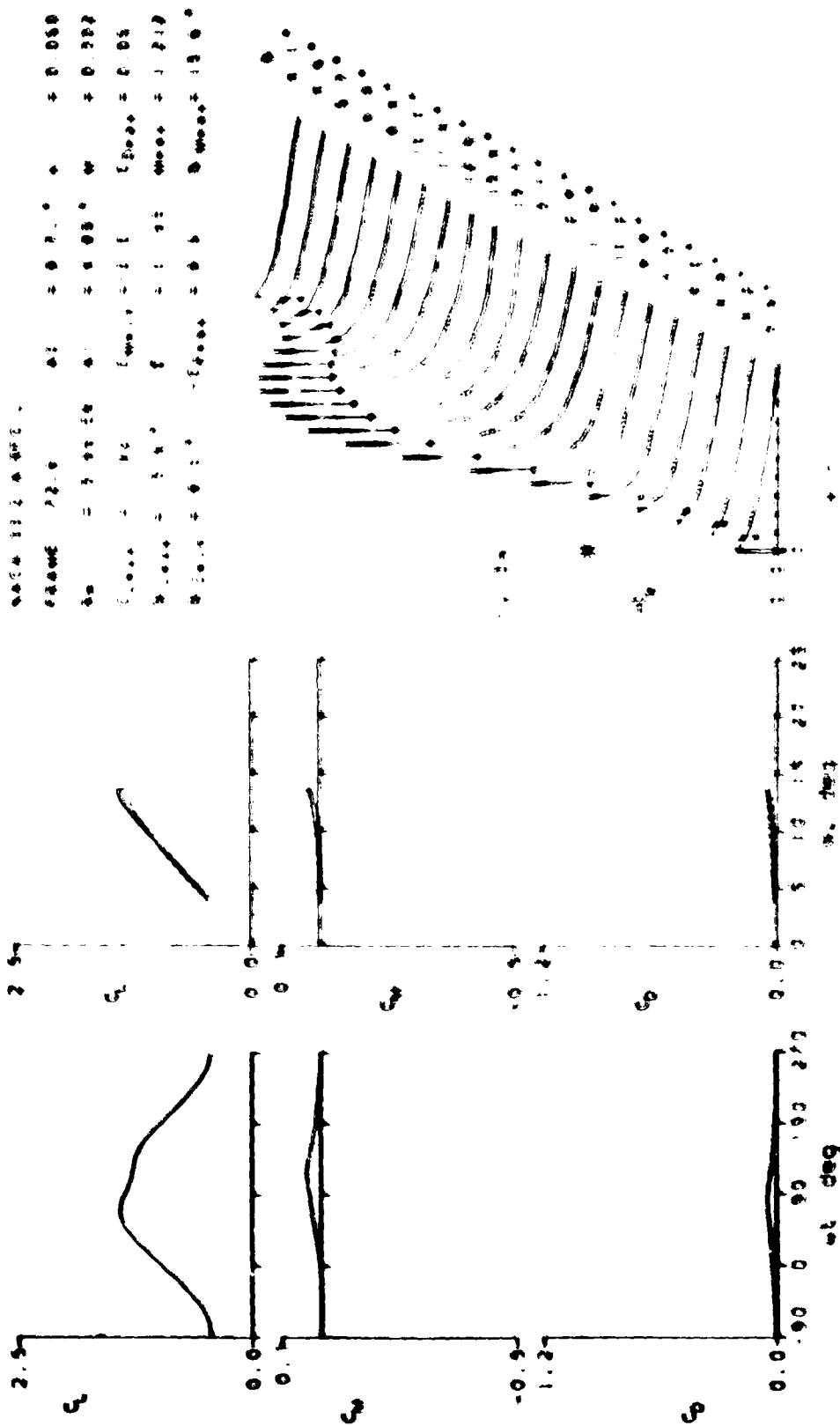


Figure 1.2 - Curved Stress

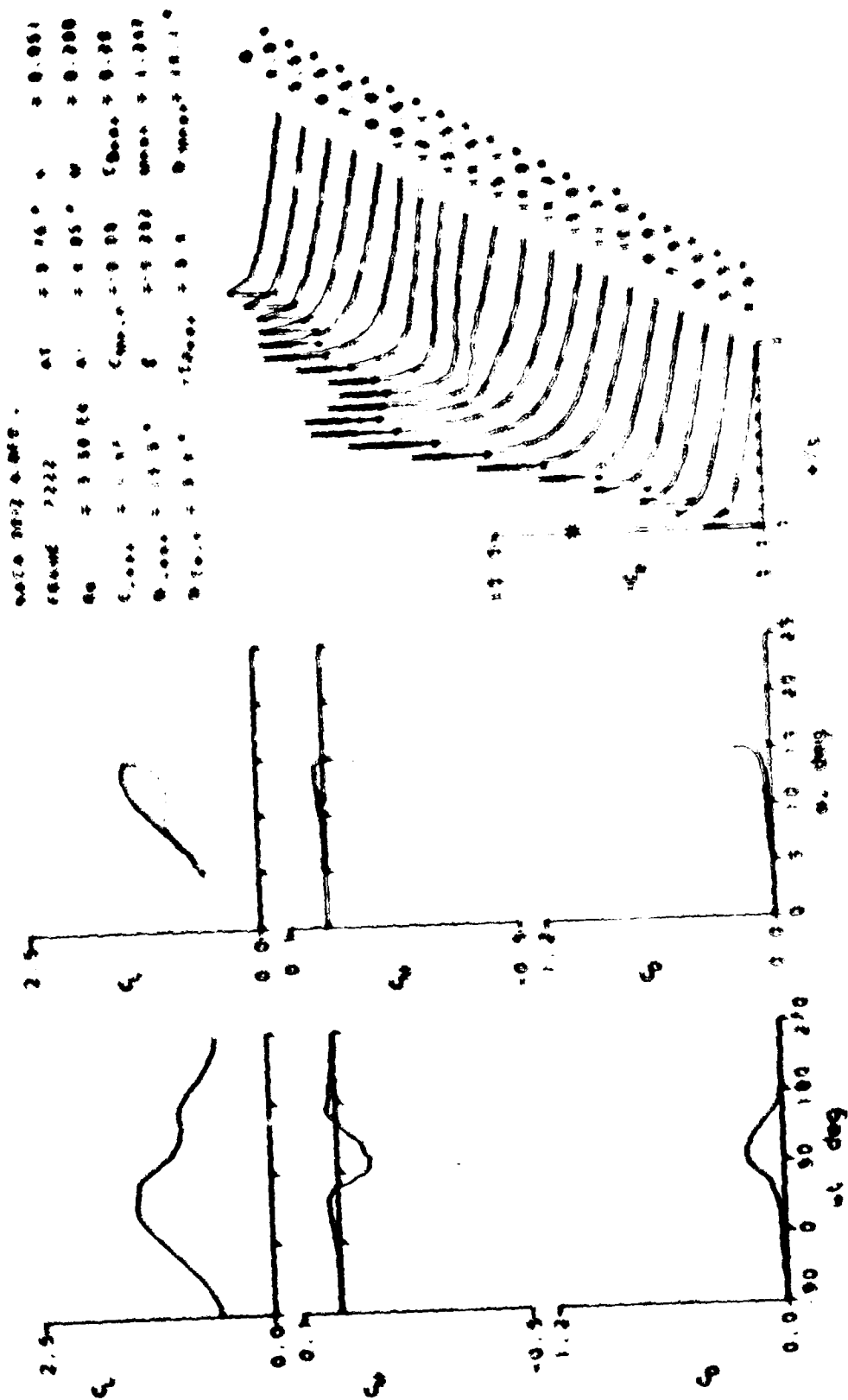
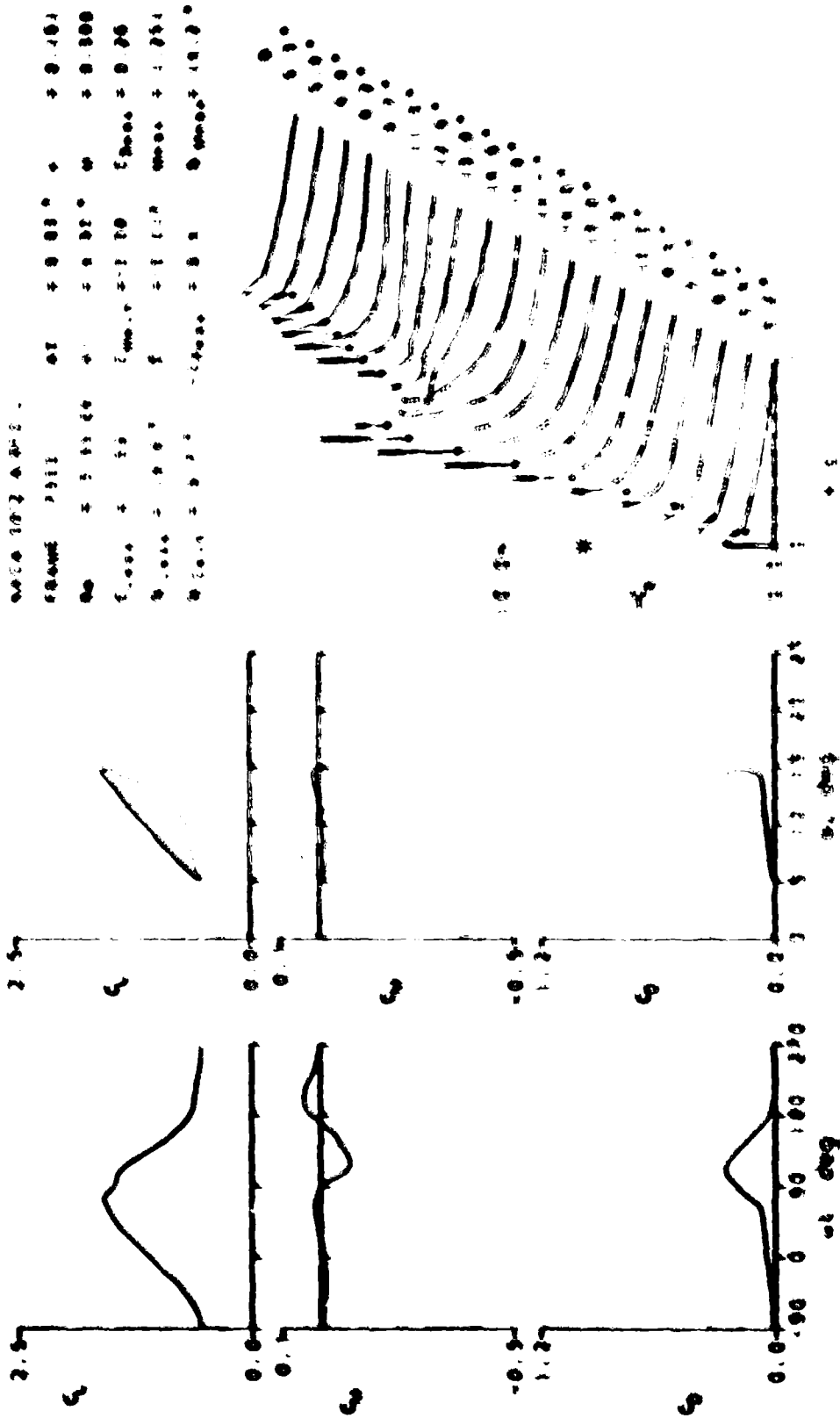
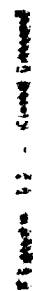


Figure 10 - 11 April 1964





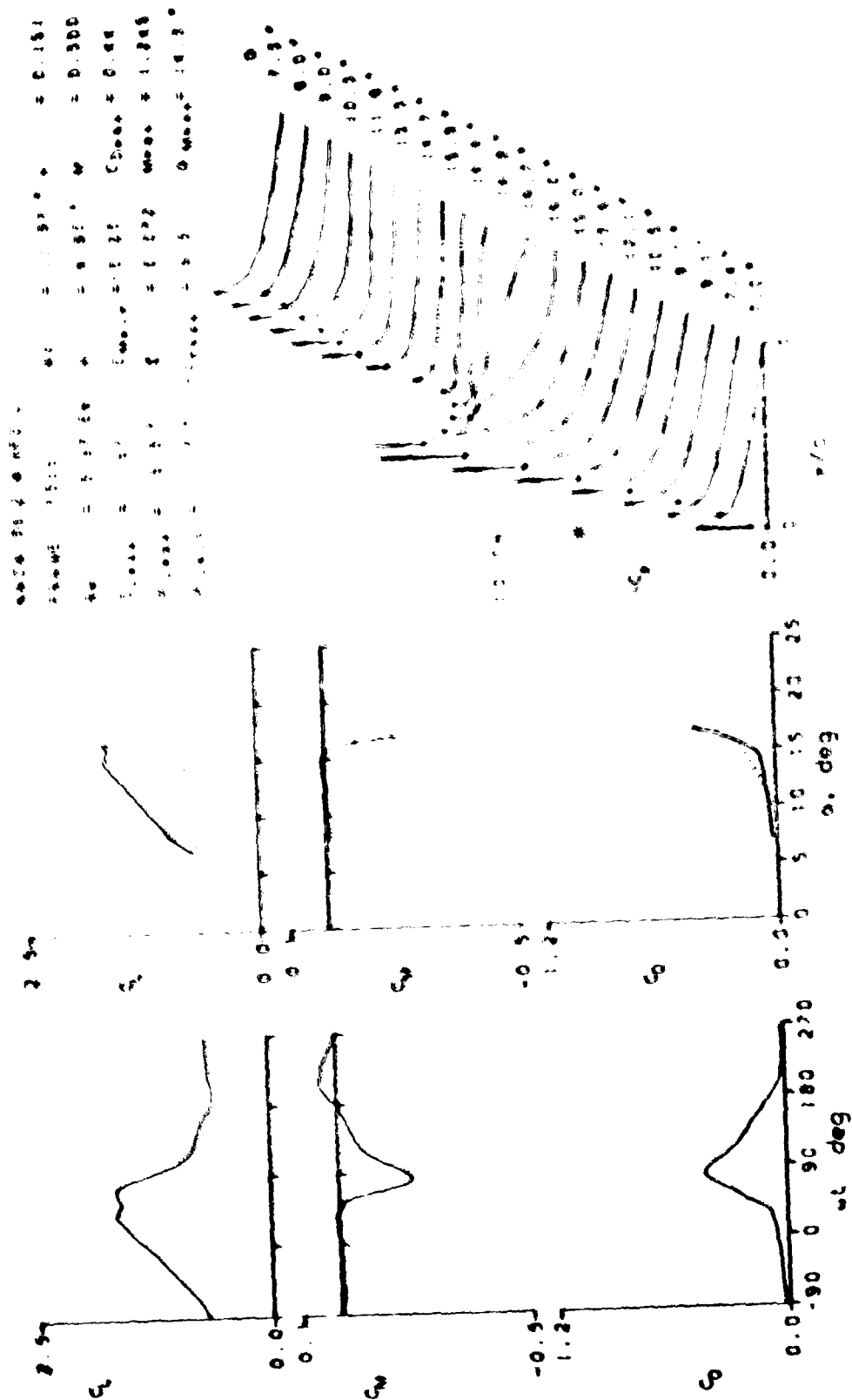


Figure 12.- Continued.

NACA 2012 A 075
 $\alpha_{crit} = 21.3^\circ$ $\alpha_{crit} = 21.3^\circ$ $\alpha_{crit} = 21.3^\circ$
 $\alpha_{crit} = 21.3^\circ$ $\alpha_{crit} = 21.3^\circ$ $\alpha_{crit} = 21.3^\circ$
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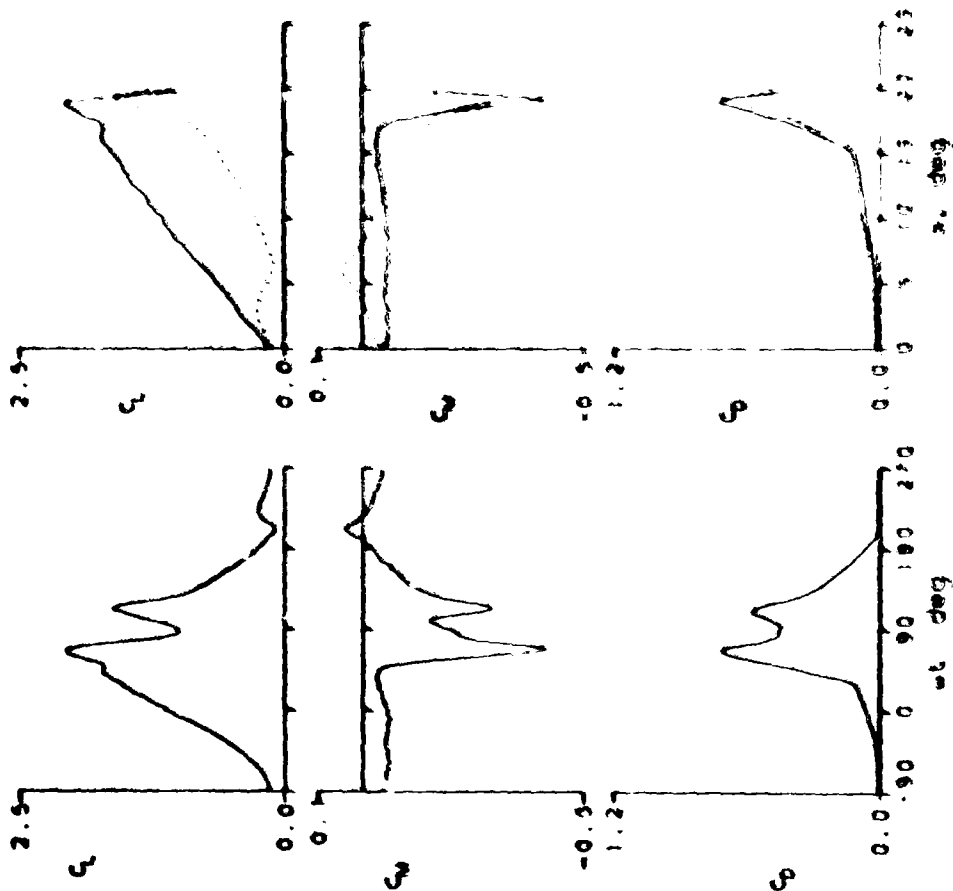


Figure 12. - Good Inset

NACA 2012 A 84

NAME	0121	AS	= 3.70°	α	= 0.253
Re	= 2.0520	Δ	= 3.53°	W	= 0.038
C _{max}	= 2.1	C _{max}	= 1.00	C _{max}	= 0.71
S _{max}	= 1.94°	Γ	= 1.27°	W _{max}	= 0.107
S _{C_{max}}	= 0.14	Γ _{max}	= 0.1	S _{W_{max}}	= 17.2°

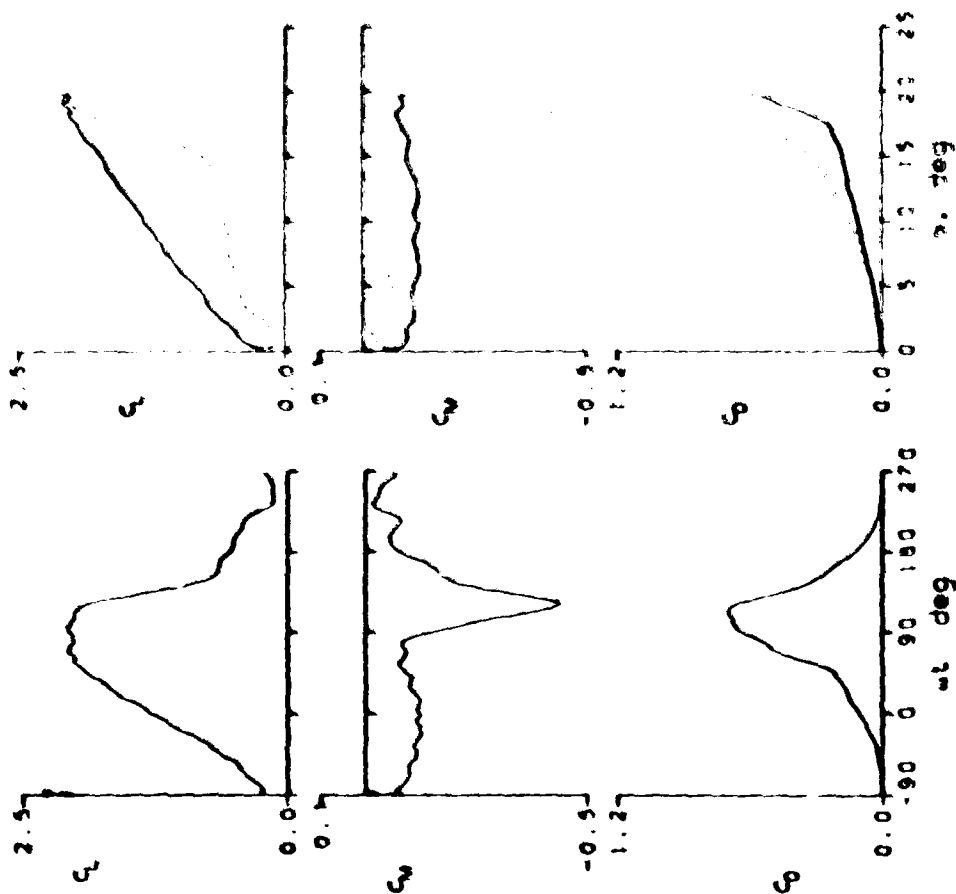


Figure 12.- Continued.

NACA 0012 A 870

FRATE	0.122	A0	= 14.85°	a	= 0.103
Re	= 2.49 E6	A'	= 9.90°	u	= 0.036
C _{l,000}	= 2.12	C _{m,000}	= -0.42	C _{D,000}	= 0.06
C _{l,000}	= 20.0°	C	= 0.433	M ₀₀₀	= 0.108
C _{l,000}	= 14.4°	-C _{D,000}	= 7.9	O _{M,000}	= 15.3°

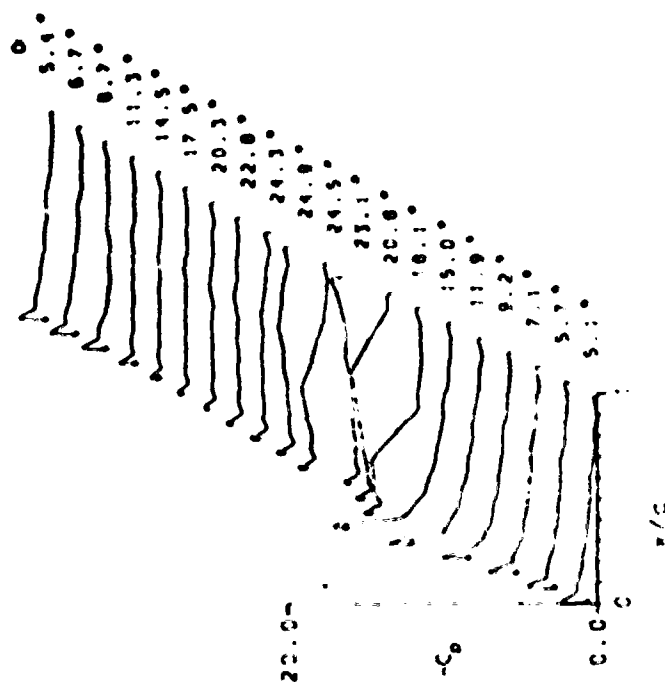
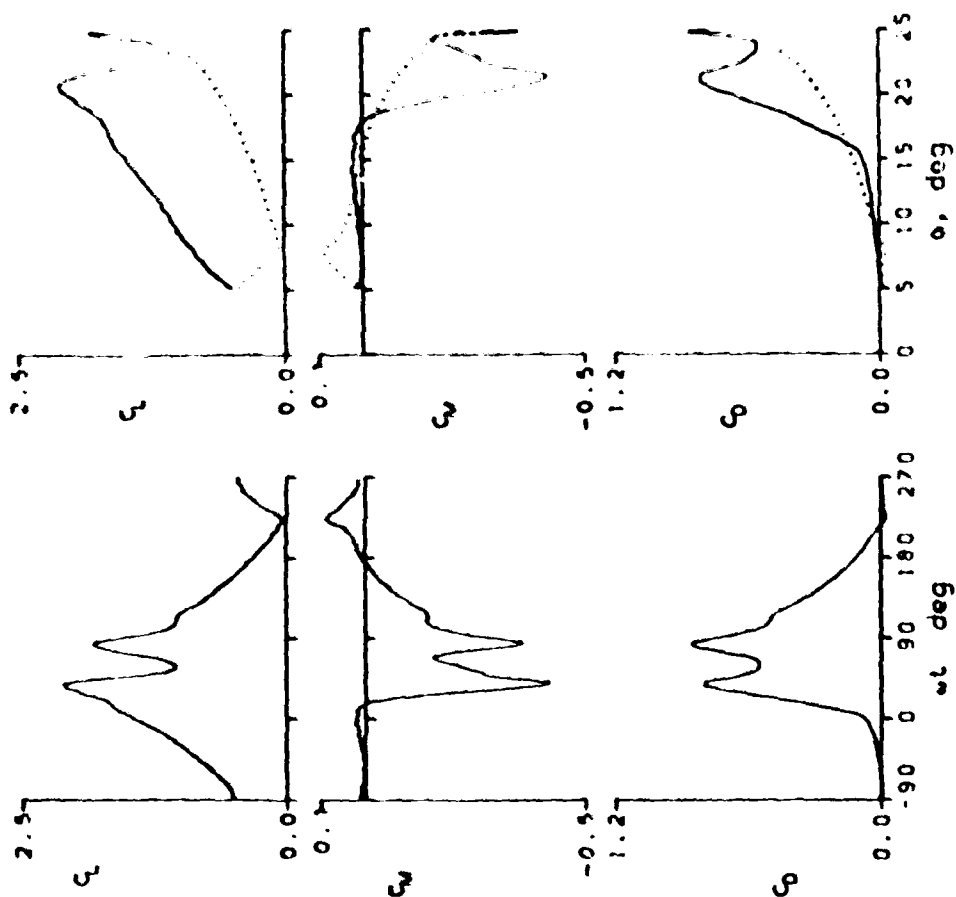


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 8134 $\alpha_0 = 14.84^\circ$ $\alpha = 0.153$

$Re = 2.48 \times 10^6$ $A' = 9.90^\circ$ $M = 0.036$

$C_{L,00} = 2.12$ $C_{D,00} = 0.41$ $C_{D,00} = 0.92$

$\phi_{L,00} = 22.5^\circ$ $\phi = 0.142$ $M_{00} = 0.103$

$\phi_{C_{L,00}} = 14.4^\circ$ $-C_{D,00} = 7.4$ $\phi_{M_{00}} = 16.2^\circ$

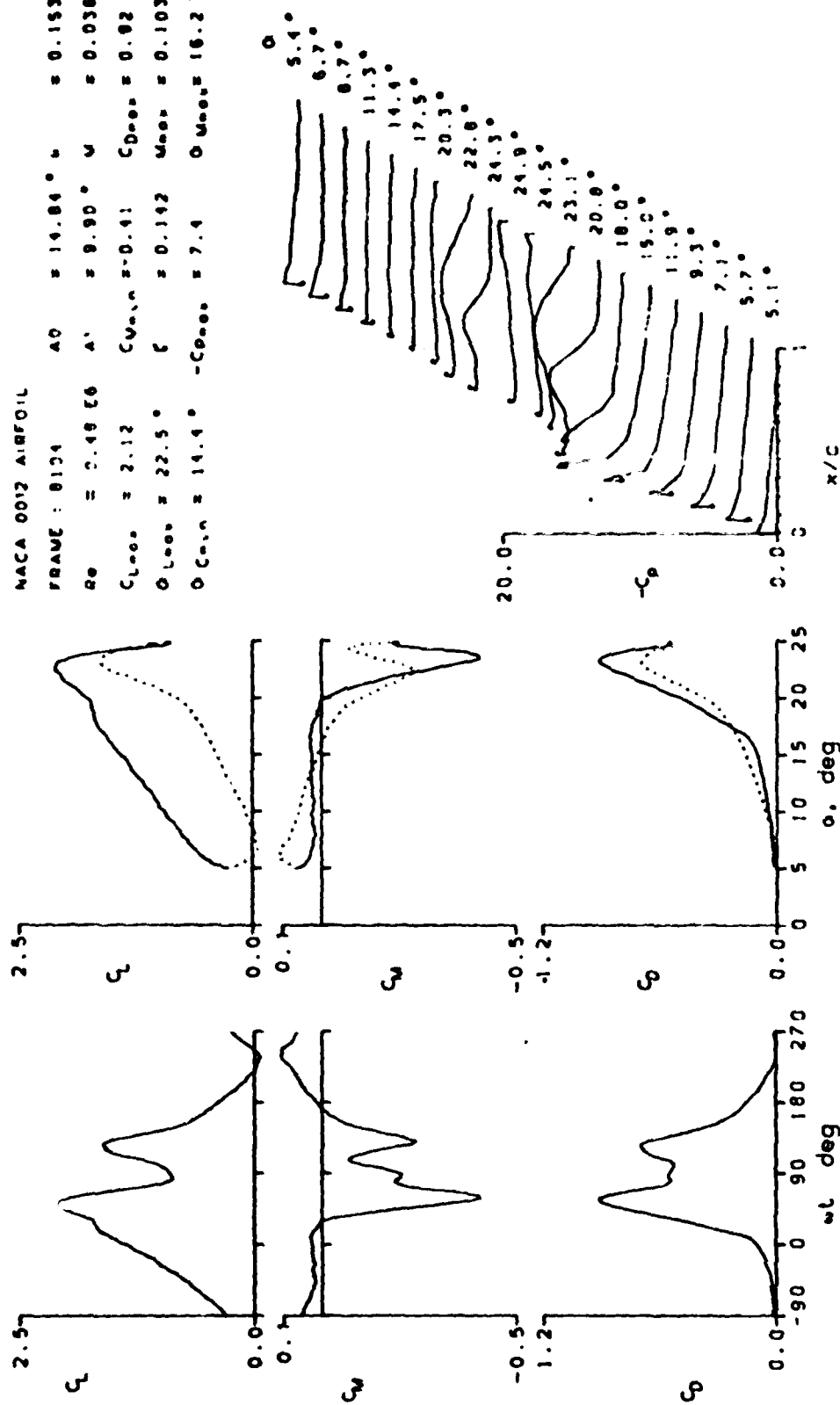
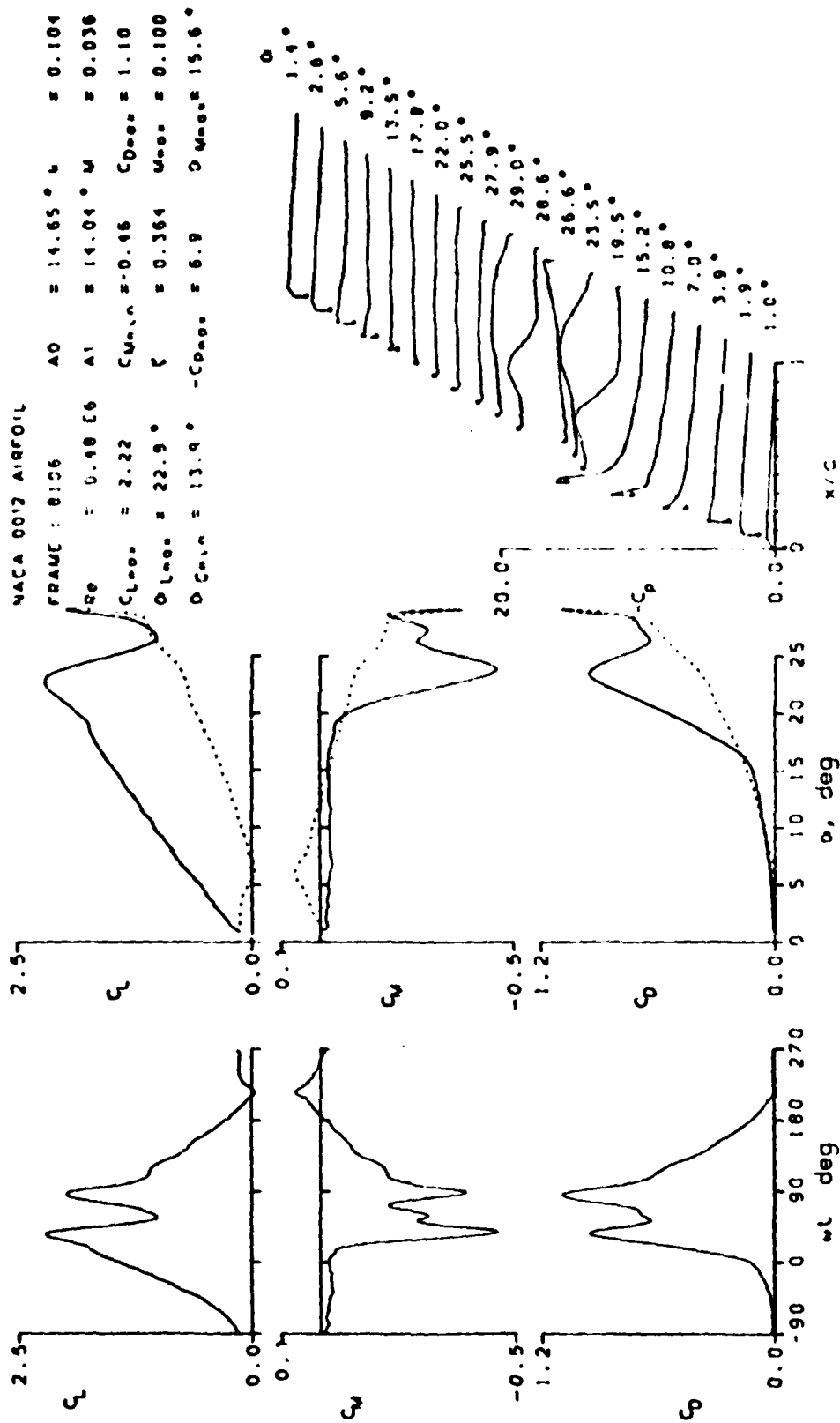


Figure 12.- Continued.



NACA 0012 AIRFOIL
 PRANDTL : 0.114 $AC = 14.80^\circ$ $h = 0.089$
 $Re = 0.98 \times 10^6$ $A1 = 9.94^\circ$ $M = 0.072$
 $C_{L_{max}} = 2.20$ $C_{D_{min}} = 0.41$ $C_{D_{max}} = 0.93$
 $O_{L_{max}} = 22.2^\circ$ $C = 0.144$ $M_{max} = 0.273$
 $O_{C_{L_{max}}} = 14.4^\circ$ $-C_{D_{max}} = 12.8$ $O_{M_{max}} = 21.3^\circ$

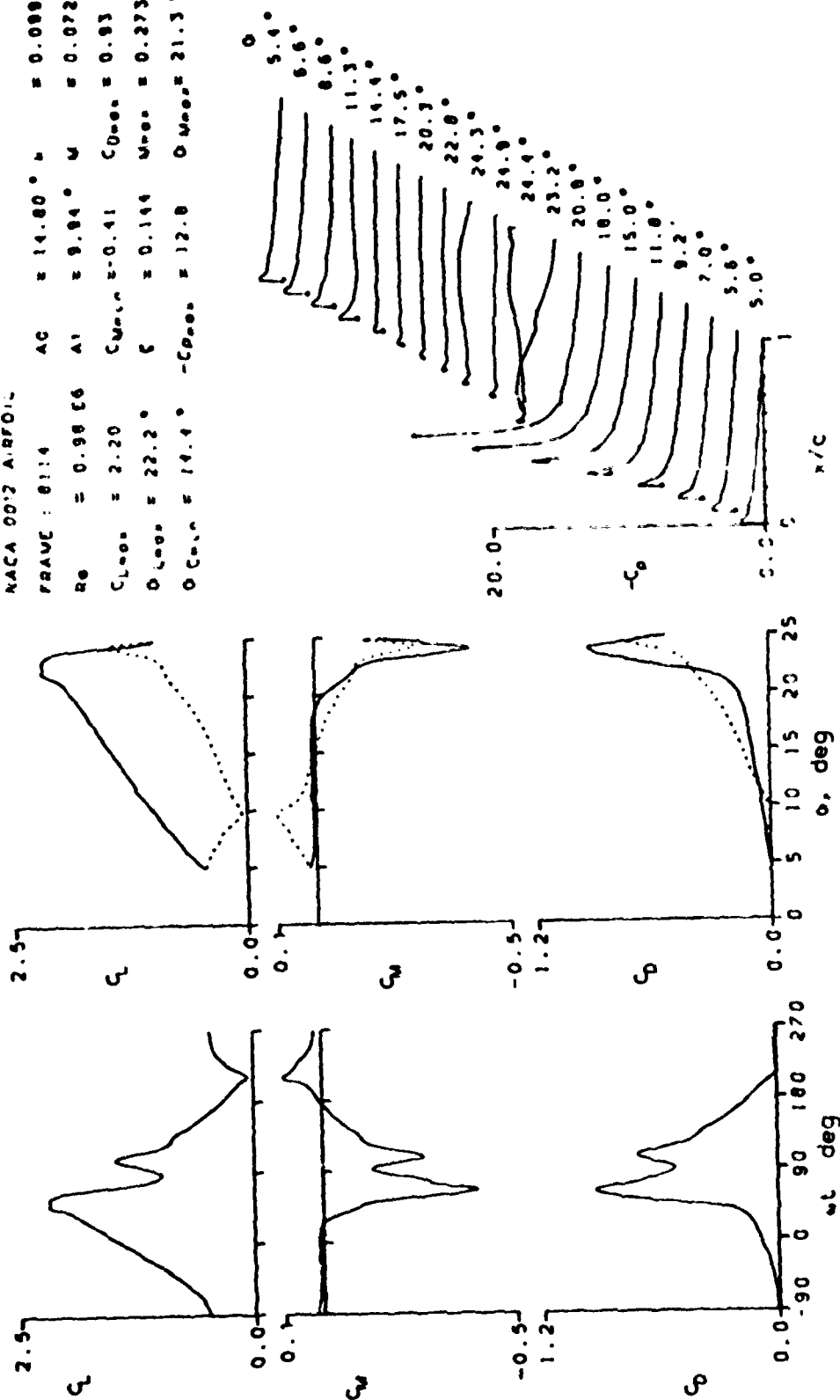


Figure 12.- Continued.

NACA 0012 - 88FO -
 $Re = 8.116$ $AC = 14.05^\circ$ $\alpha = 0.148$
 $Re = 5.98 \times 10^6$ $AC = 9.89^\circ$ $\alpha = 0.072$
 $C_{L,0.0} = 2.35$ $C_{M,0.0} = 0.45$ $C_{D,0.0} = 1.06$
 $C_{L,0.0} = 24.5^\circ$ $C_{M,0.0} = 0.200$ $C_{D,0.0} = 0.200$
 $C_{L,0.0} = 14.4^\circ$ $C_{M,0.0} = 14.4$ $C_{D,0.0} = 22.0^\circ$

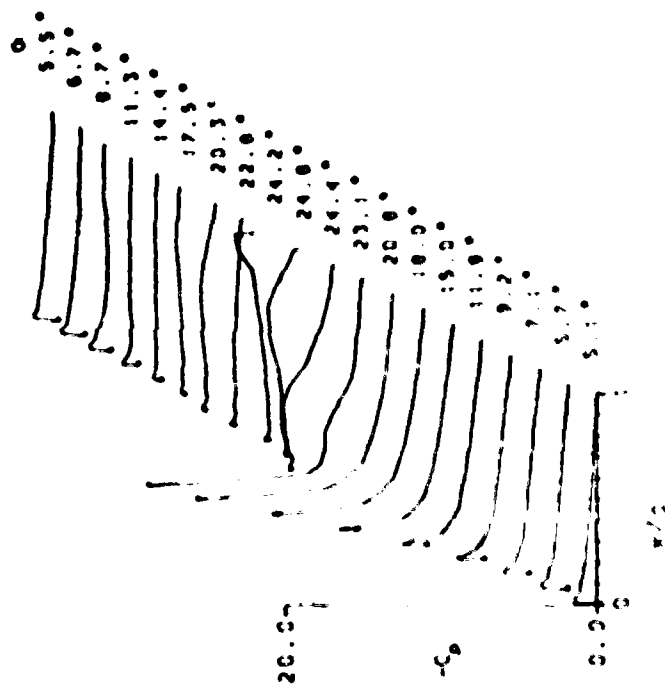
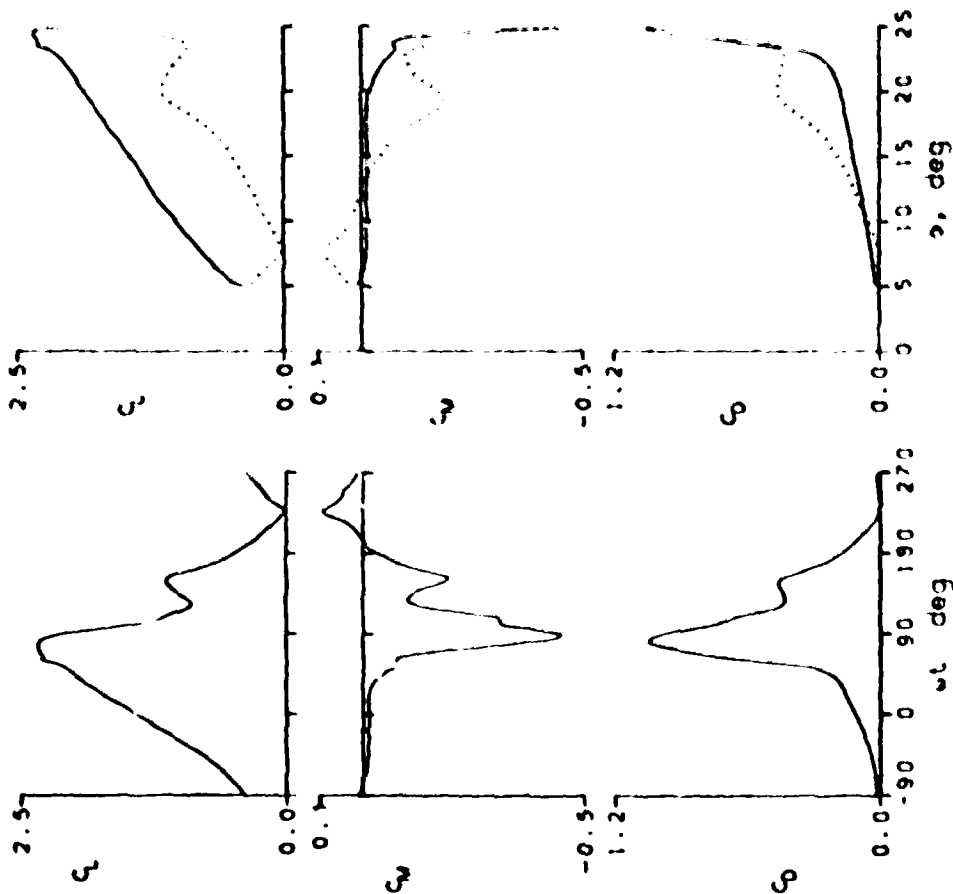
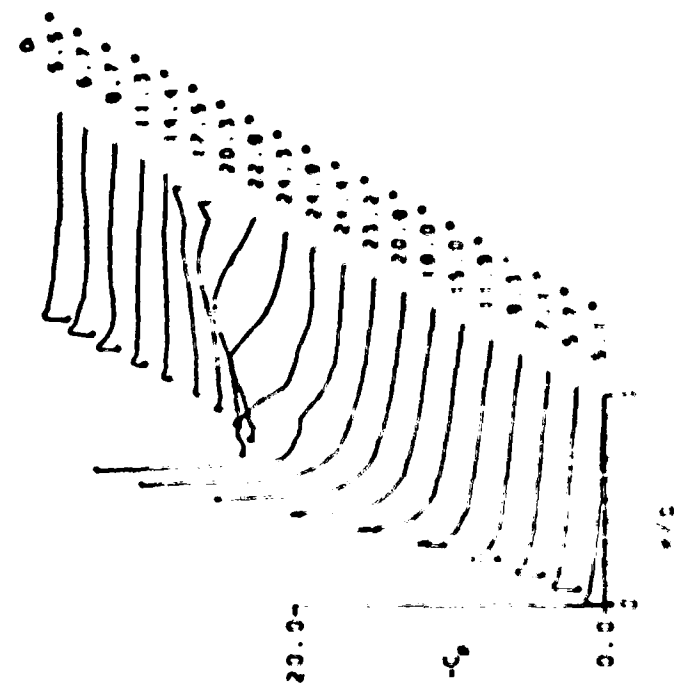
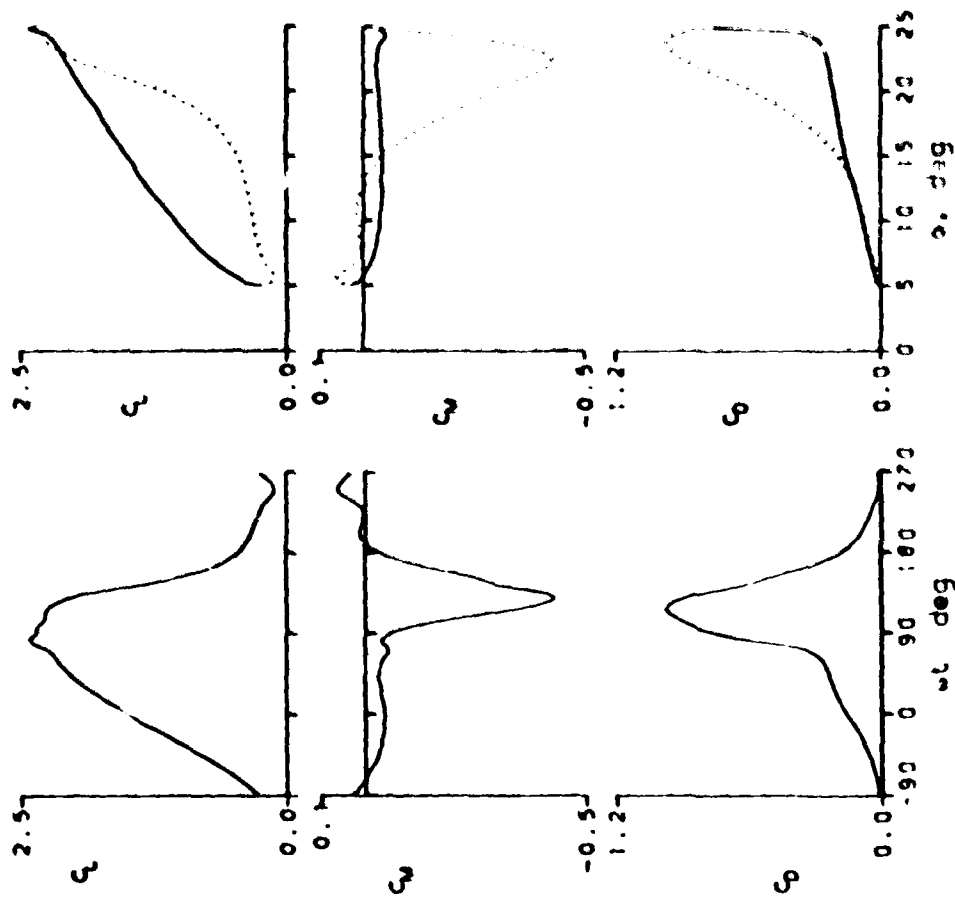


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 0110 $\Delta \theta = 14.84^\circ$ $\alpha = 0.240$
 $R_0 = 0.98$ $\Delta \theta = 9.89^\circ$ $M = 0.072$
 $C_{L,000} = 2.43$ $C_{M,000} = 2.43$ $C_{D,000} = 0.98$
 $C_{L,000} = 24.0^\circ$ $C_{M,000} = 0.607$ $M_{000} = 0.308$
 $C_{L,000} = 14.4^\circ$ $-C_{D,000} = 16.3$ $C_{M,000} = 24.3^\circ$



NACA 2312 A 810 -
 FRAME 0.25 $\Delta\theta = 10.07^\circ$ $\alpha = 0.000$
 $Re = 2.39 \times 10^6$ $\Delta\theta = 13.00^\circ$ $\alpha = 0.072$
 $C_{Lmax} = 2.44$ $C_{Dmax} = 0.55$ $C_{Dmax} = 1.20$
 $C_{Lmax} = 2.51$ $C_{Dmax} = 0.55$ $C_{Dmax} = 0.200$
 $C_{Lmax} = 2.39$ $C_{Dmax} = 0.55$ $C_{Dmax} = 23.2^\circ$

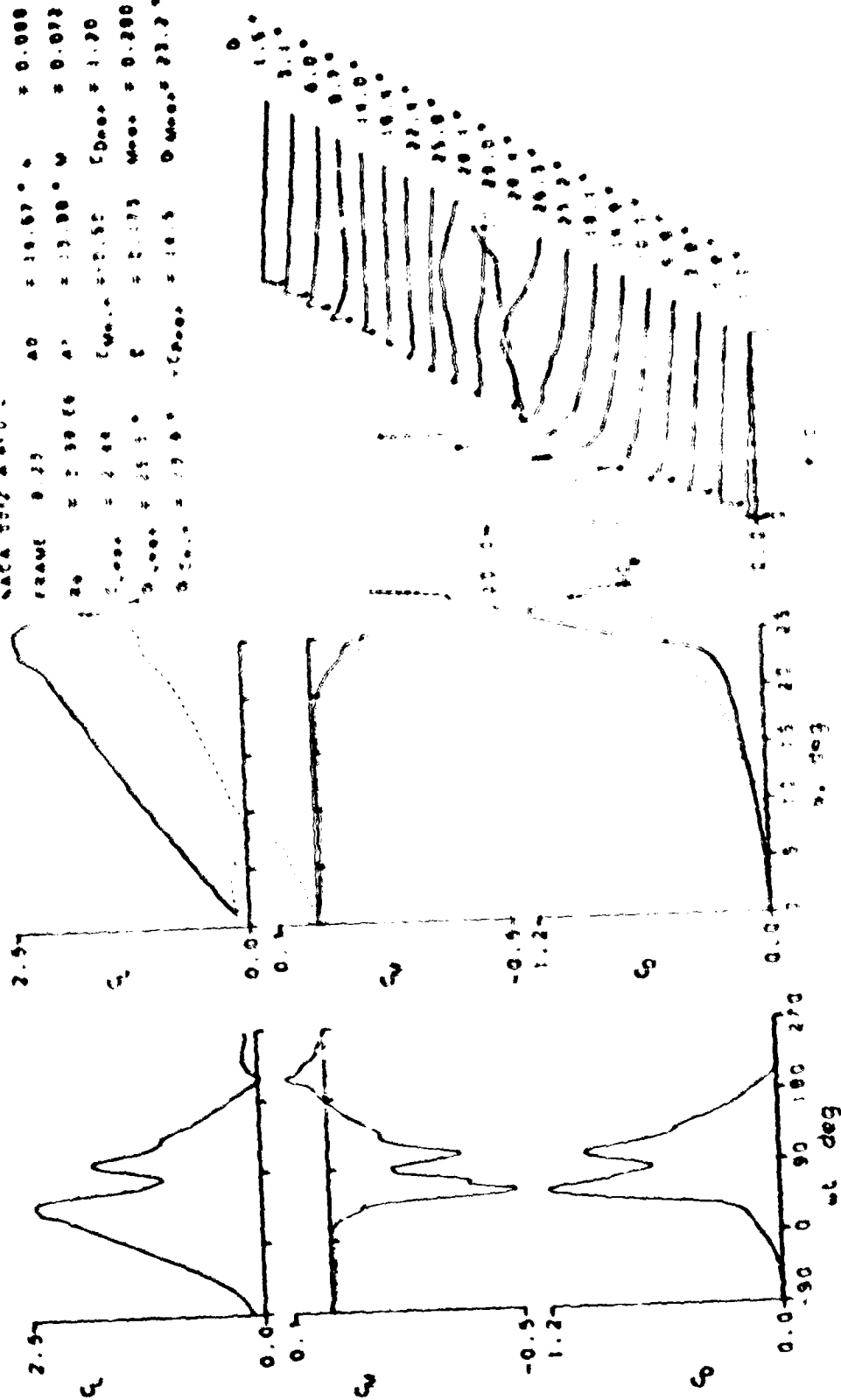


Figure 12 - Continued.

NACA 99-2 A-B-C-D
 RANK 8233 $\alpha_0 = 9.81^\circ$ $\alpha = 0.240$
 $\alpha = 7.3024$ $\alpha = 9.81^\circ$ $\alpha = 0.077$
 $C_{L,000} = 1.1$ $C_{M,000} = 0.07$ $C_{D,000} = 0.16$
 $C_{L,000} = 1.1$ $C_{M,000} = 0.07$ $C_{D,000} = 0.16$
 $C_{L,000} = 1.1$ $C_{M,000} = 0.07$ $C_{D,000} = 0.16$
 $C_{L,000} = 1.1$ $C_{M,000} = 0.07$ $C_{D,000} = 0.16$

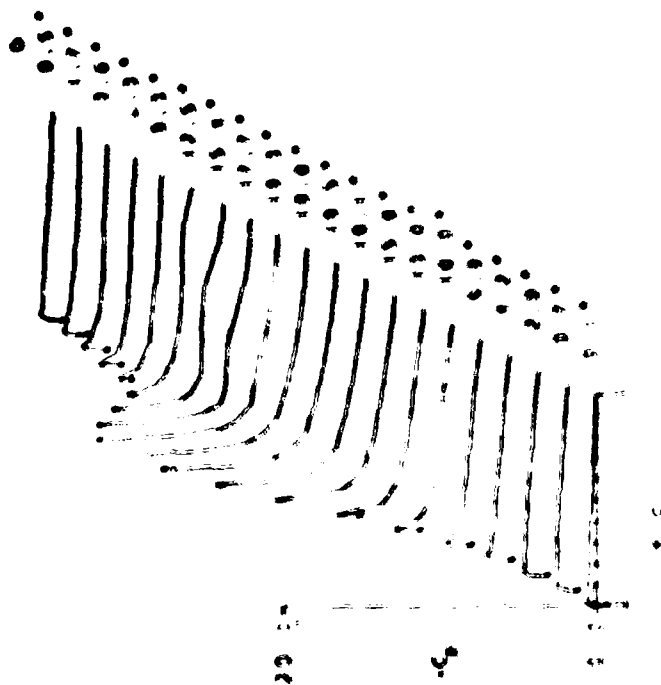
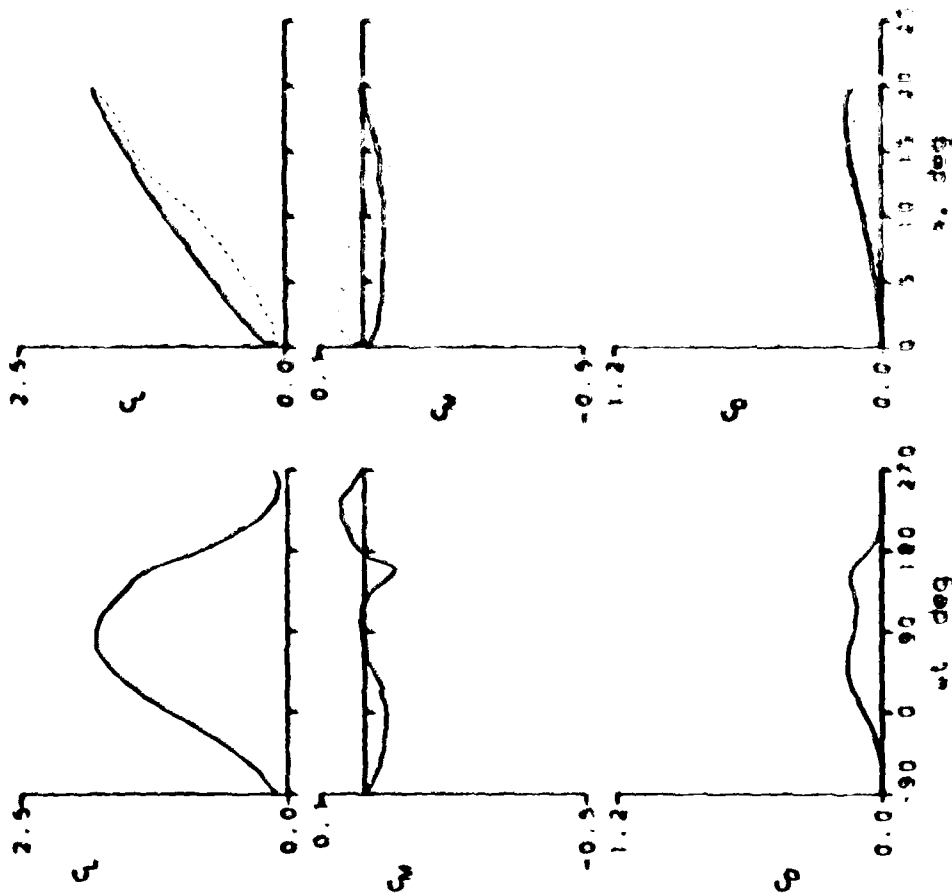


Figure 12.- Continued.

0.020 0.12 0.25
 0.040 0.25 0.50
 0.080 0.50 1.00
 0.160 1.00 2.00
 0.320 2.00 4.00
 0.640 4.00 8.00
 1.280 8.00 16.00

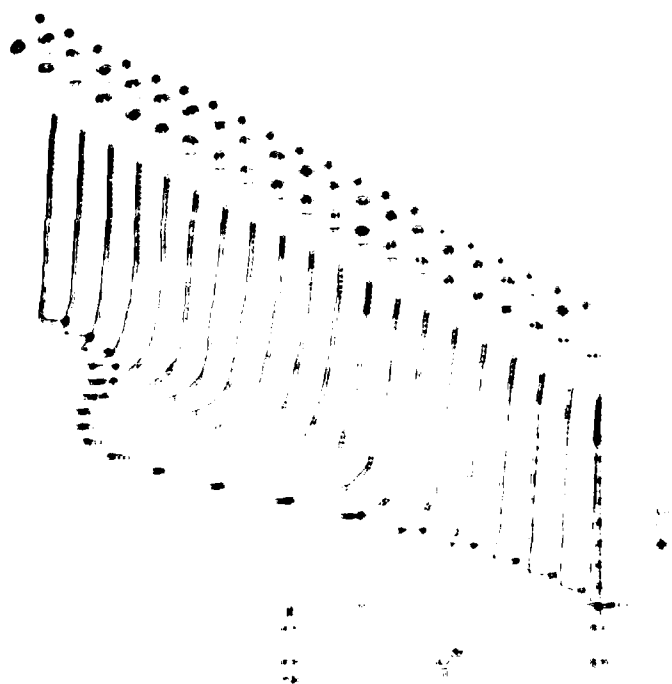
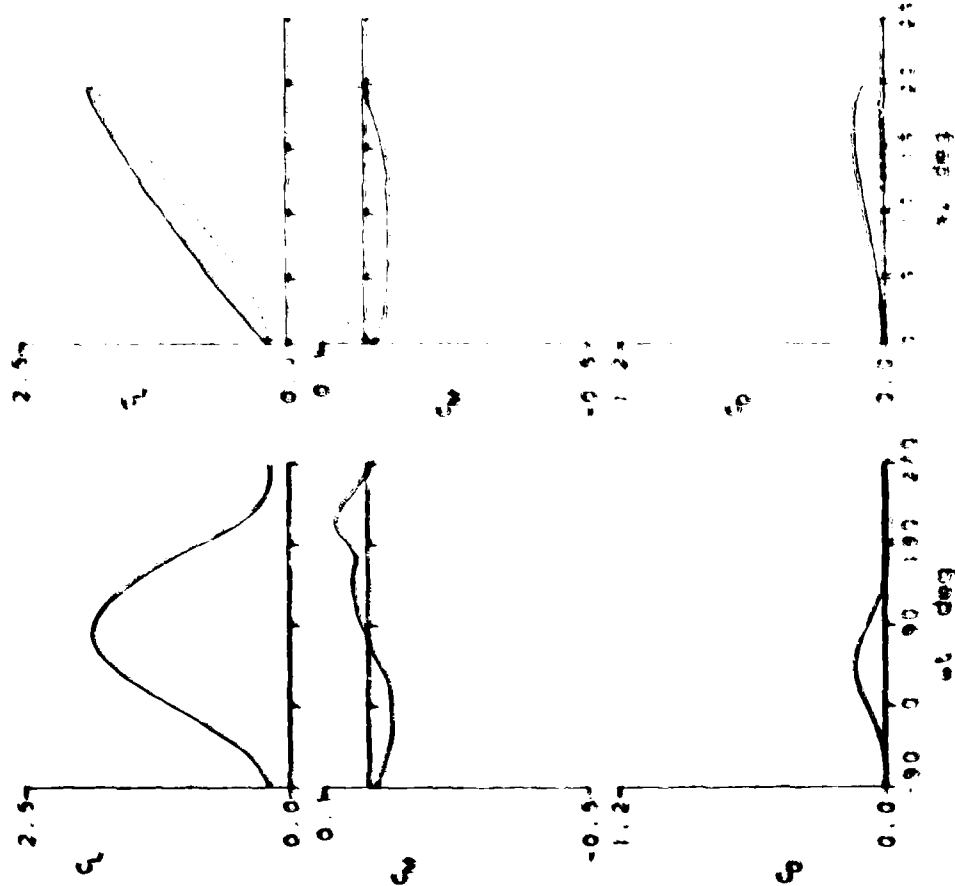


Figure 1 - Zeta potential

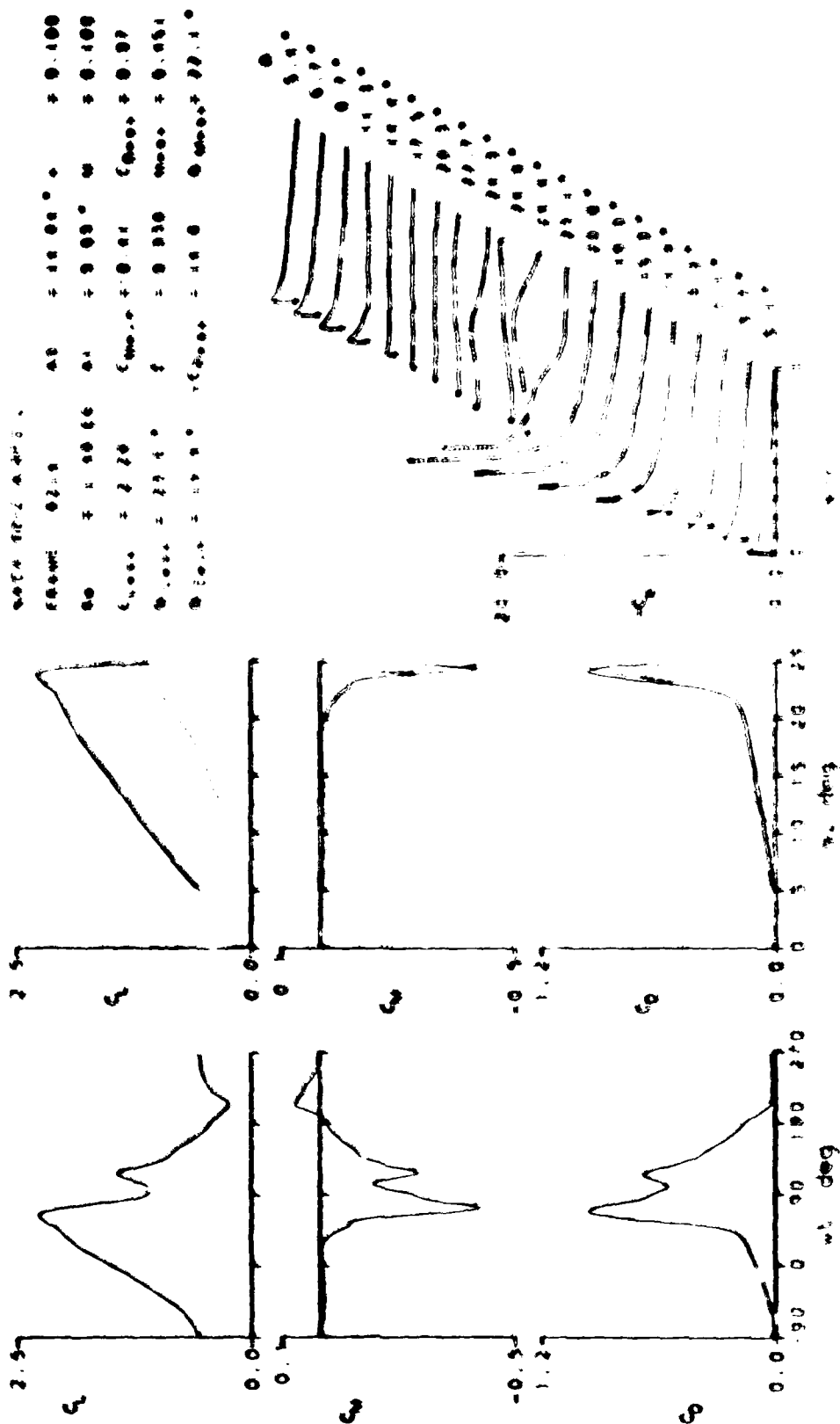
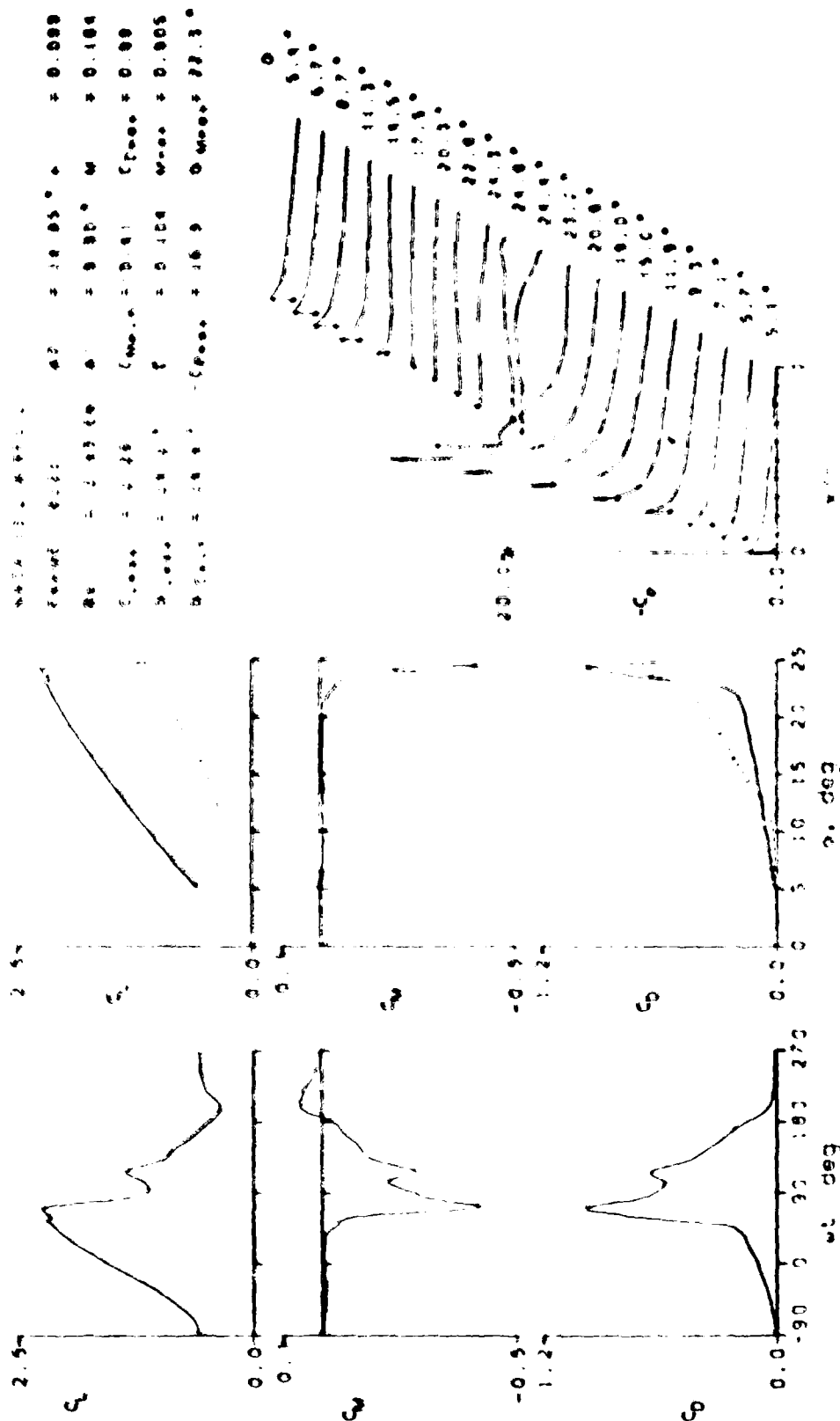


Figure 17 - Control System



NACA 0012 AIRFOIL

FRAME : 8222	$\alpha_0 = 14.84^\circ$	$\alpha = 0.149$
$R_0 = 2.42 \text{ (6)}$	$\alpha_1 = 9.90^\circ$	$\alpha = 0.184$
$C_{L_{max}} = 2.38$	$C_{M_{min}} = -0.47$	$C_{D_{min}} = 1.08$
$O_{L_{max}} = 24.9^\circ$	$\zeta = -0.350$	$M_{max} = 0.937$
$O_{C_{min}} = 14.4^\circ$	$-C_{D_{max}} = 17.8$	$O_{M_{max}} = 23.2^\circ$

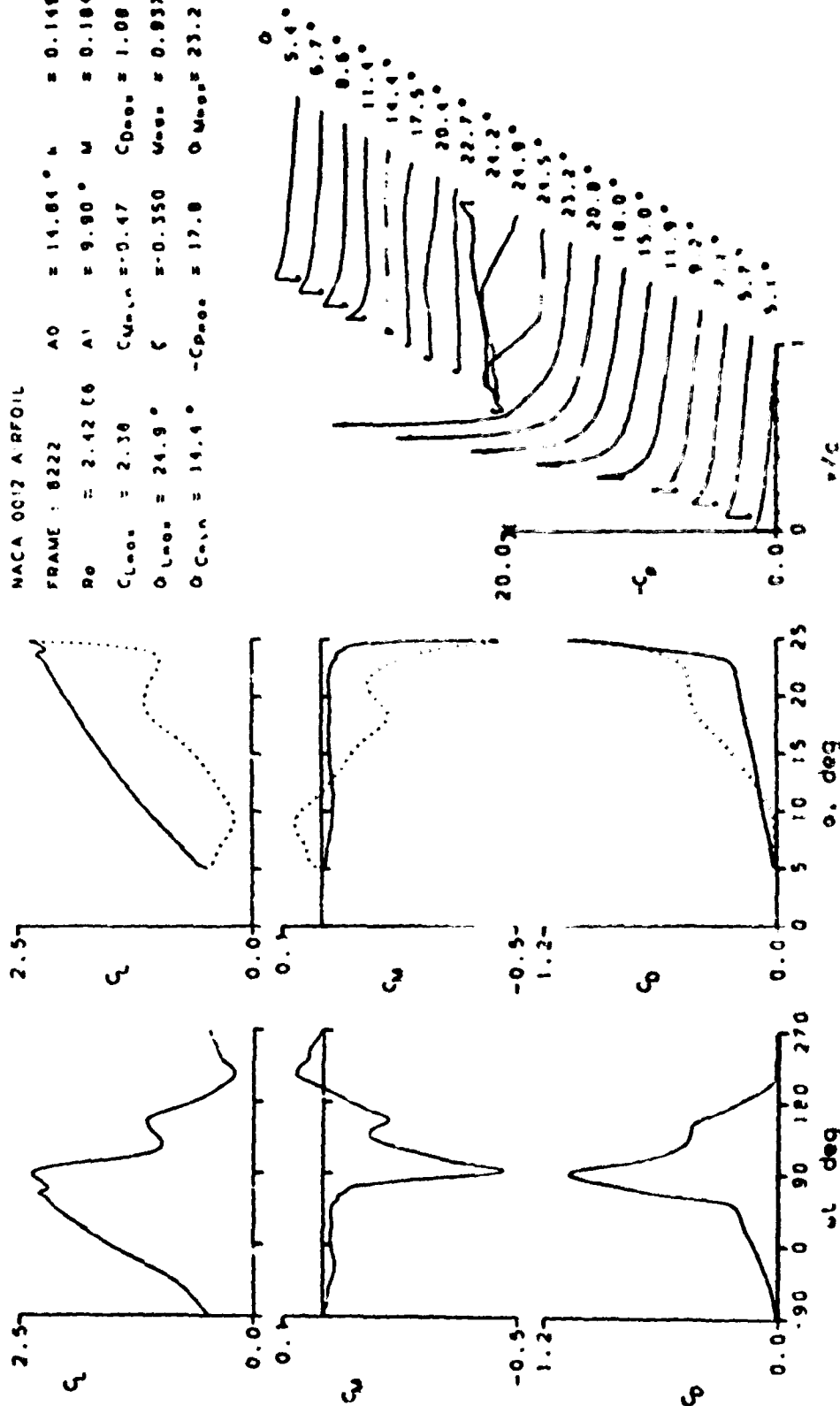


Figure 12.- Continued.



NACA 6012 AIRFOIL

$Re = 9322$ $AO = 14.89^\circ$ $\alpha = 0.235$
 $Re = 2.34 \times 10^6$ $AI = 6.00^\circ$ $M = 0.184$
 $C_{L,000} = 2.06$ $C_{M,000} = 0.20$ $C_{D,000} = 0.50$
 $C_{L,000} = 20.8^\circ$ $C = 1.060$ $Mach = 0.903$
 $C_{L,000} = 14.6^\circ$ $-C_{D,000} = 15.0$ $C_{M,000} = 20.9^\circ$

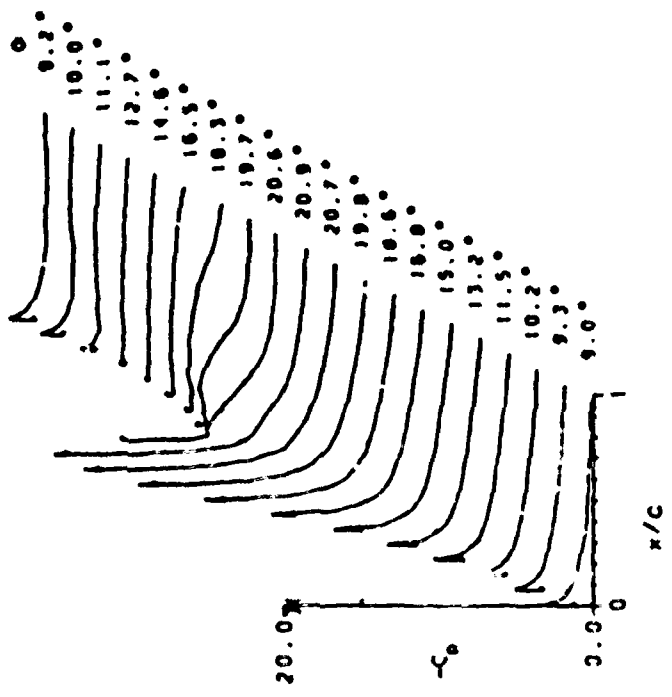
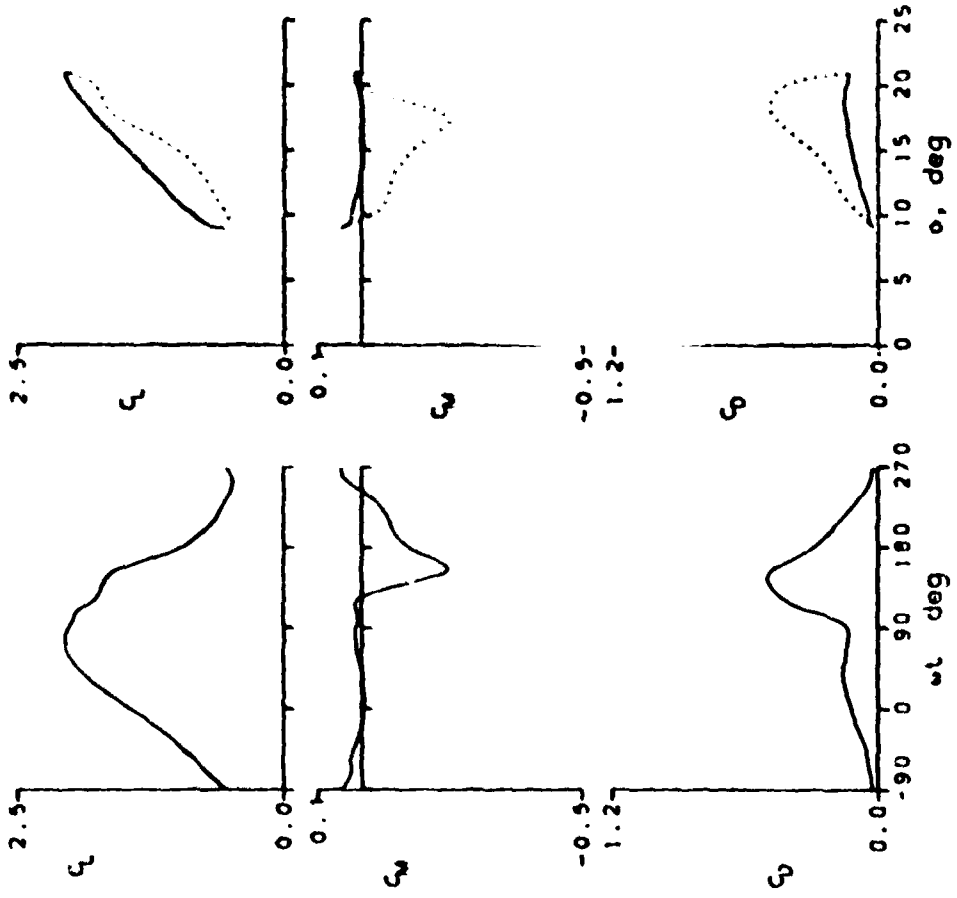


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 9101 $\alpha_0 = 14.98^\circ$ $\mu = 0.284$
 $Re = 2.36 \times 10^6$ $\alpha_1 = 4.89^\circ$ $M = 0.04$
 $C_{L,000} = 1.95$ $C_{M,000} = -0.02$ $C_{D,000} = 0.14$
 $C_{L,000} = 19.8^\circ$ $C = 0.008$ $M_{000} = 0.854$
 $C_{L,000} = 14.8^\circ$ $-C_{D,000} = 15.4$ $C_{M,000} = 19.8^\circ$

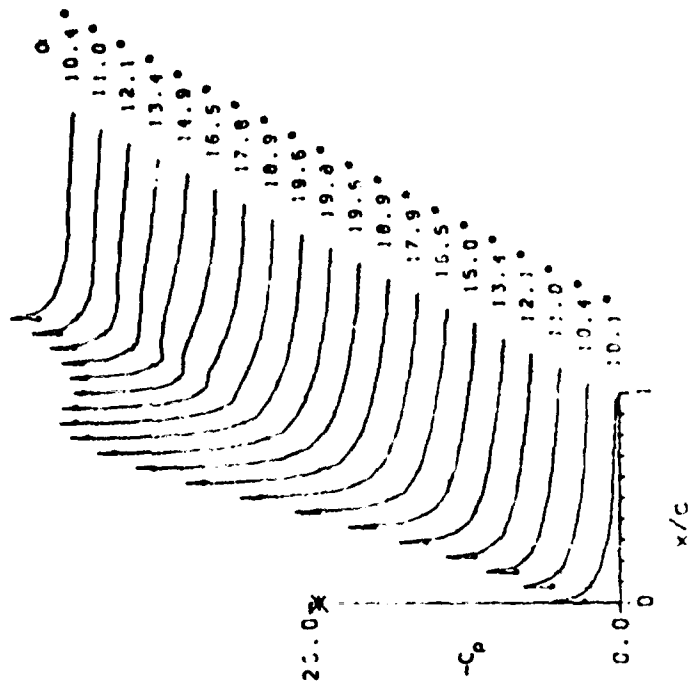
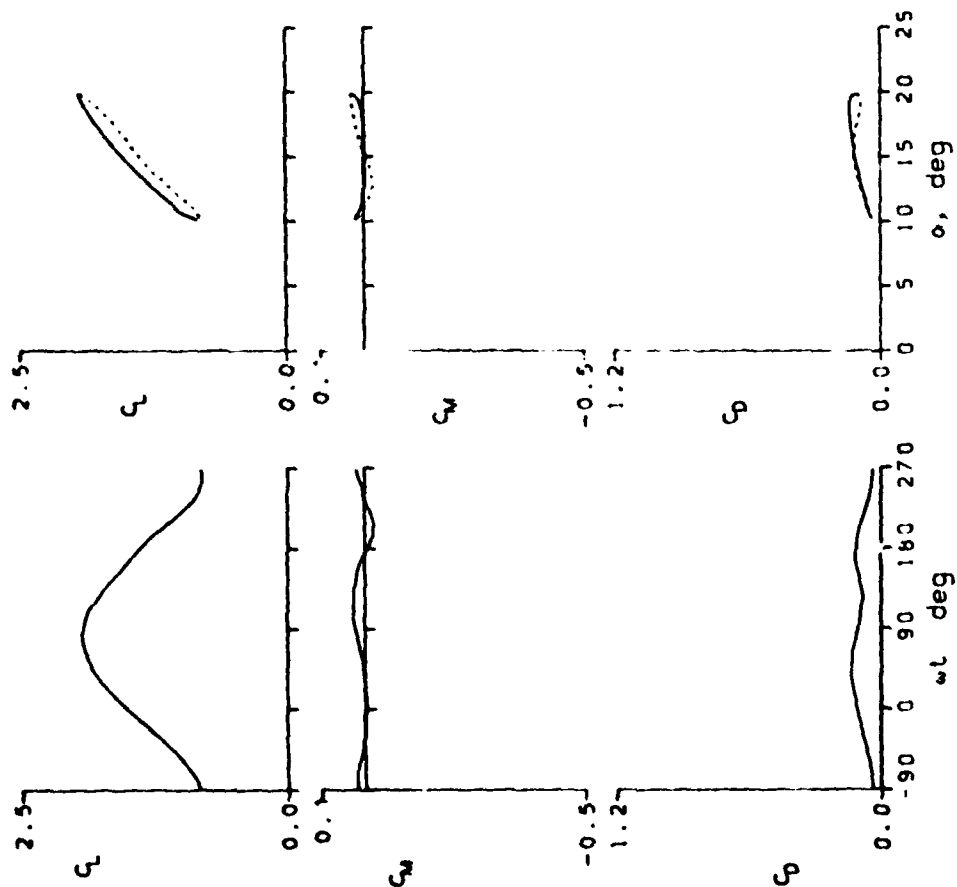


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 9106	A0 = 9.79°	h = 0.245
Re = 2.37 E6	A1 = 9.87°	M = 0.184
CLmax = 2.02	CMmin = -0.05	CDmax = 0.16
αLmax = 19.7°	ξ = 0.585	Mmax = 0.883
αCMmin = 9.4°	-CDmax = 16.2	αMmax = 19.5°

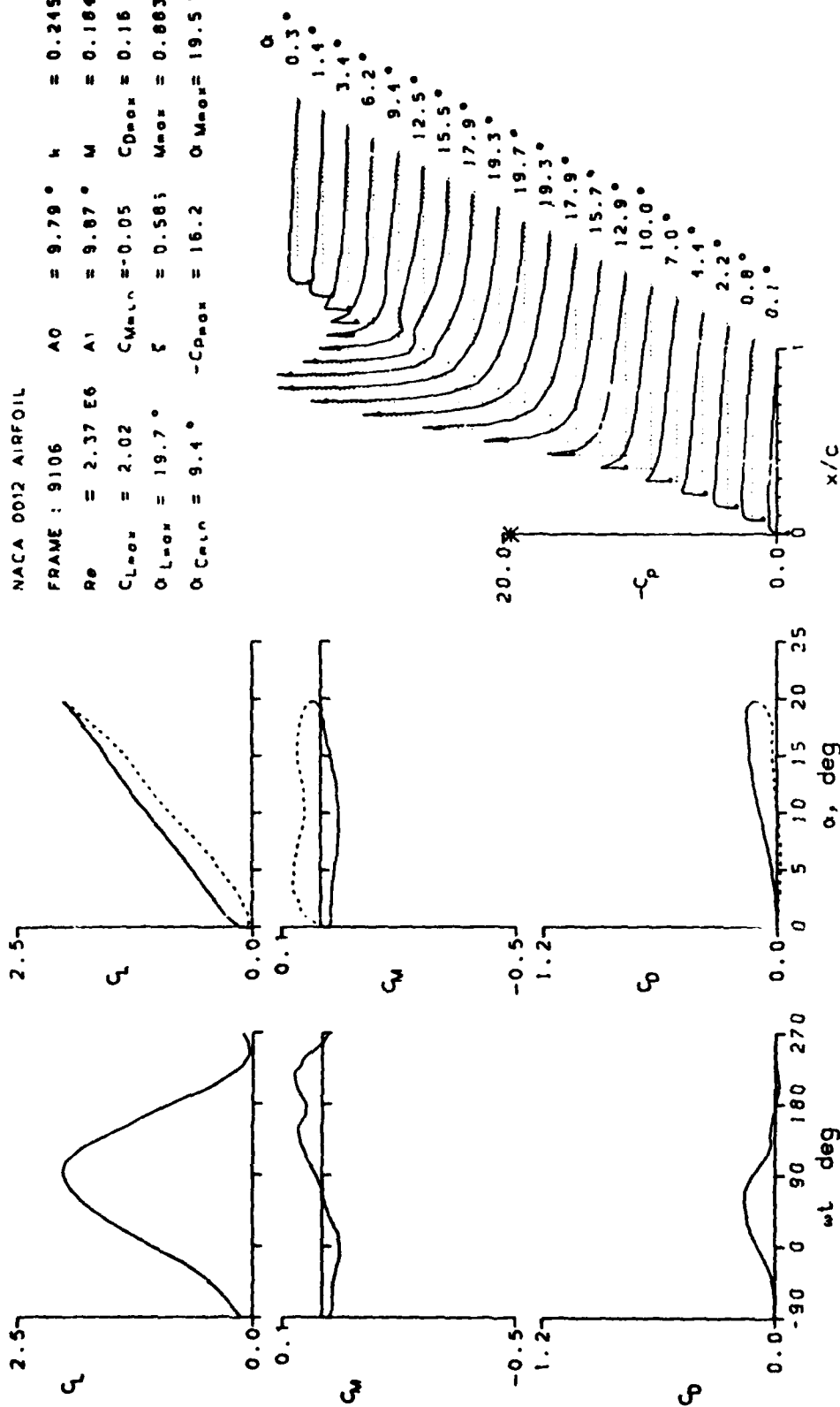


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 9110	A0 = 7.80°	h = 0.010
Re = 2.48 E6	A1 = 9.95°	M = 0.184
CLmax = 1.70	CMmax = 0.18	CDmax = 0.36
αLmax = 16.6°	ξ = -0.130	Mmax = 0.726
αCMmax = 7.3°	-CDmax = 11.8	αVMmax = 17.0°

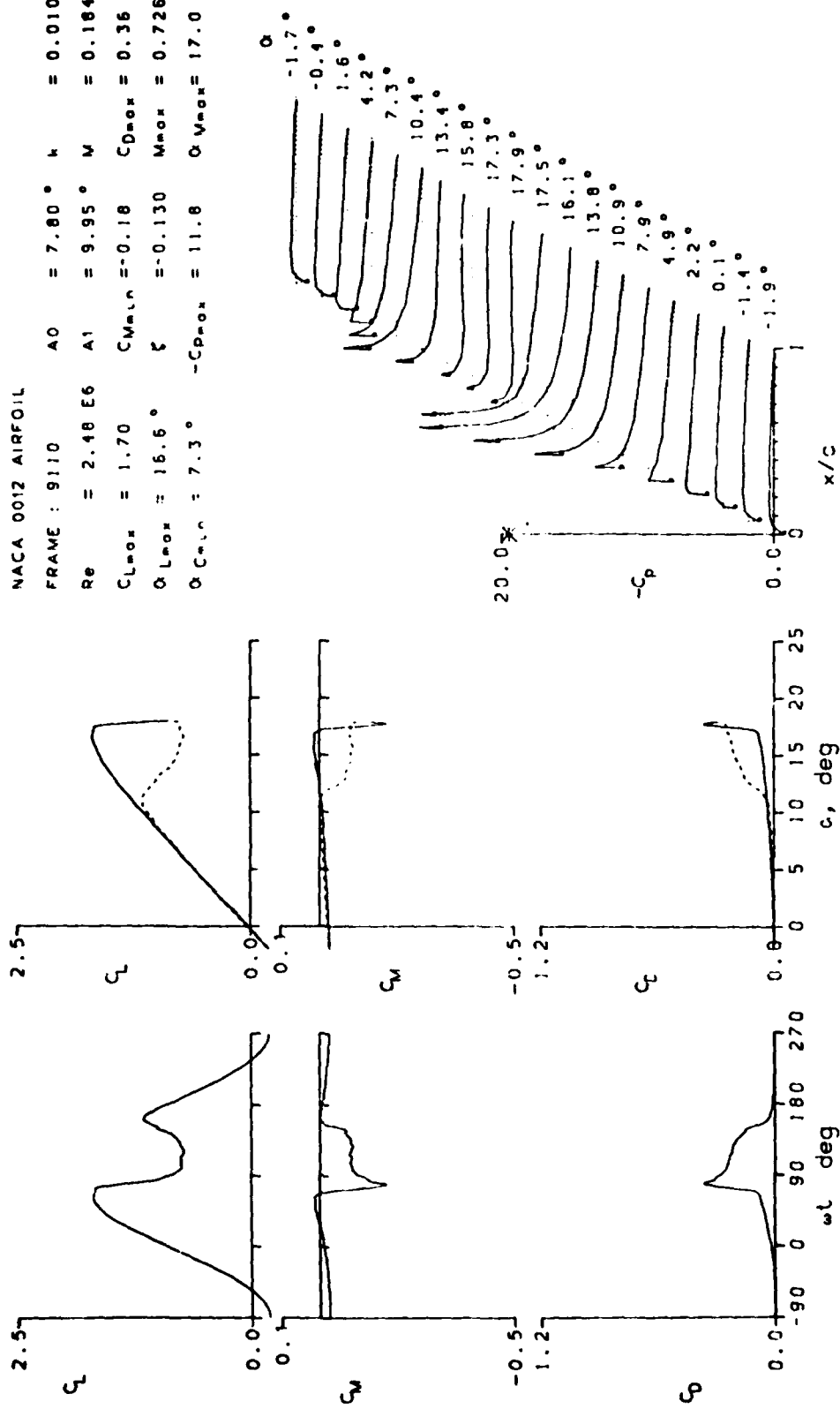


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 3112	A0 = 7.82°	h = 0.050
Re = 2.48 E6	A1 = 9.93°	M = 0.183
C _{Lmax} = 1.76	C _{Mmin} = -0.10	C _{Dmax} = 0.22
α _{Lmax} = 17.6°	ξ = -0.030	M _{max} = 0.763
α _{C_{Lmin}} = 7.3°	-C _{pmax} = 12.8	α _{Mmax} = 17.9°

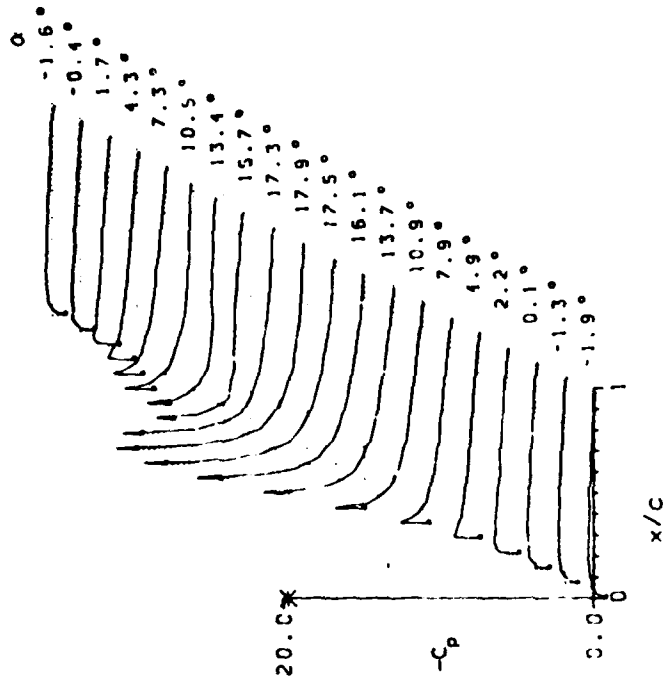
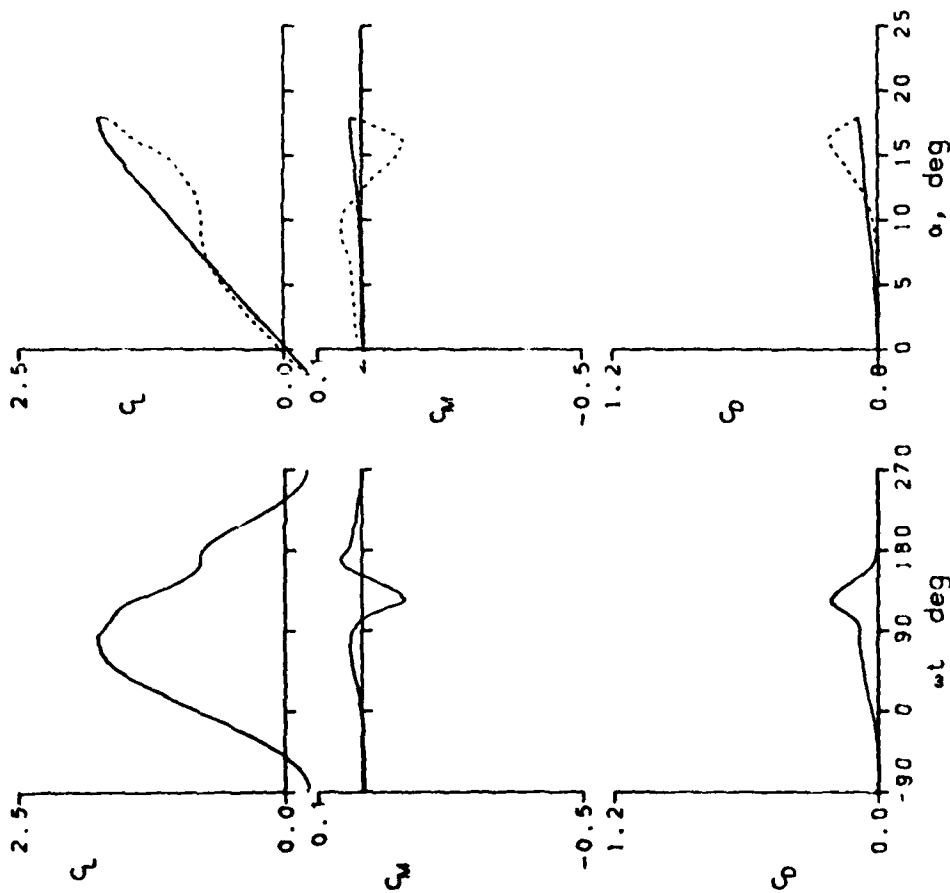


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 9:18 $A_0 = 7.78^\circ$ $\mu = 0.199$
 $R_0 = 2.45 \text{ E6}$ $A_1 = 9.95^\circ$ $M = 0.184$
 $C_{L_{\text{max}}} = 1.78$ $C_{M_{\text{min}}} = -0.04$ $C_{D_{\text{max}}} = 0.12$
 $\alpha_{L_{\text{max}}} = 17.9^\circ$ $\zeta = 0.614$ $M_{\text{max}} = 0.770$
 $\alpha_{C_{M_{\text{min}}}} = 7.2^\circ$ $-C_{D_{\text{max}}} = 13.0$ $\alpha_{M_{\text{max}}} = 17.7^\circ$

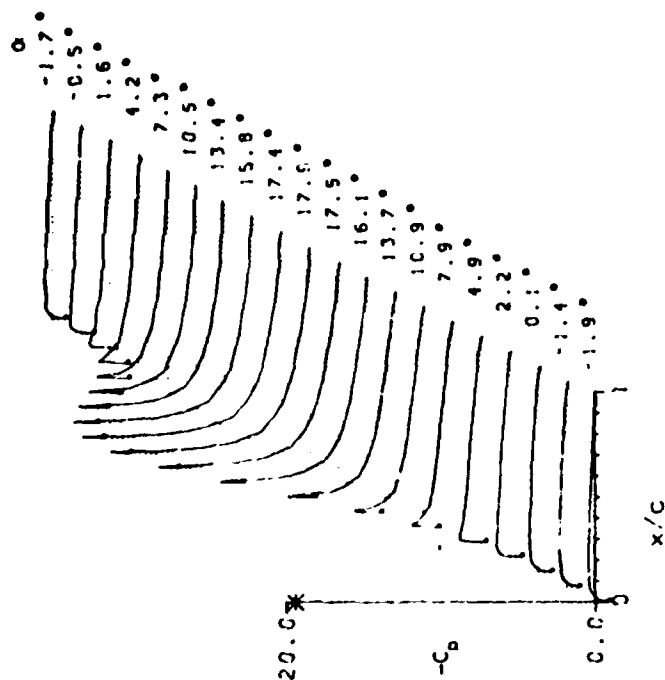
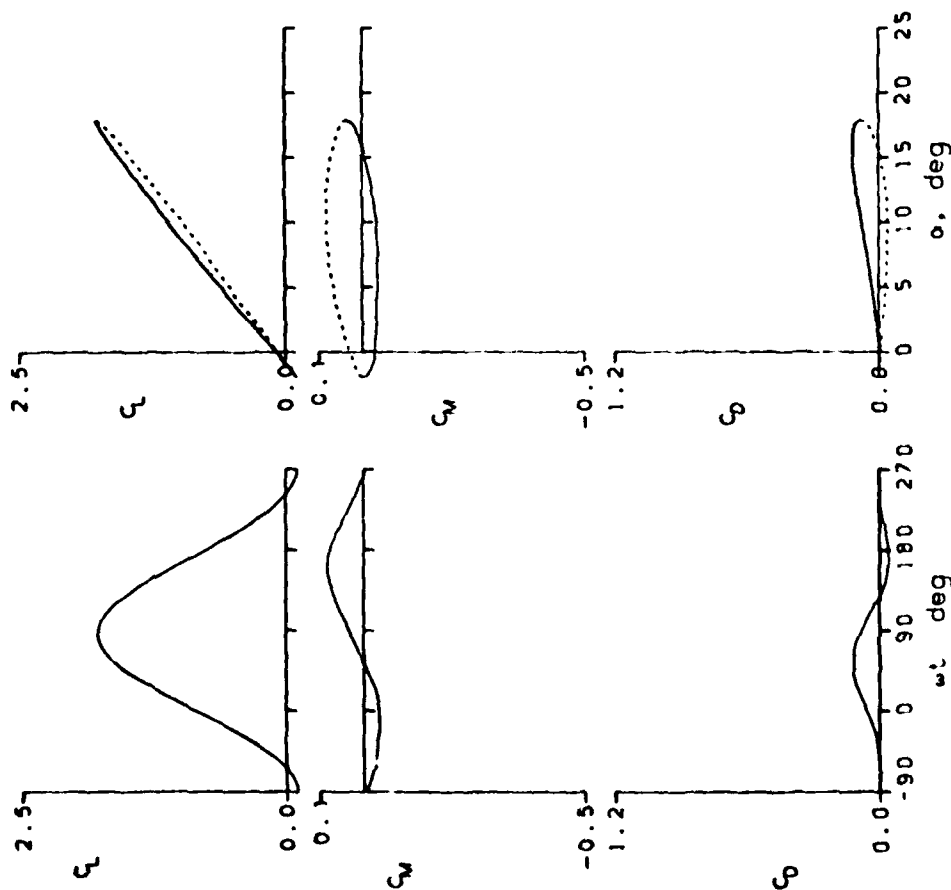


Figure 12.- Continued.

NACA 00'2 AIRFOIL
 FRAME : 9202 $A0 = 14.83^\circ$ $\mu = 0.098$
 $R0 = 2.85 E6$ $A1 = 9.91^\circ$ $M = 0.220$
 $C_{L00} = 2.20$ $C_{M00} = -0.43$ $C_{D00} = 0.96$
 $O_{L00} = 23.4^\circ$ $\zeta = 0.078$ $M_{00} = 1.106$
 $O_{C00} = 14.5^\circ$ $-C_{D00} = 15.4$ $O_{M00} = 20.3^\circ$

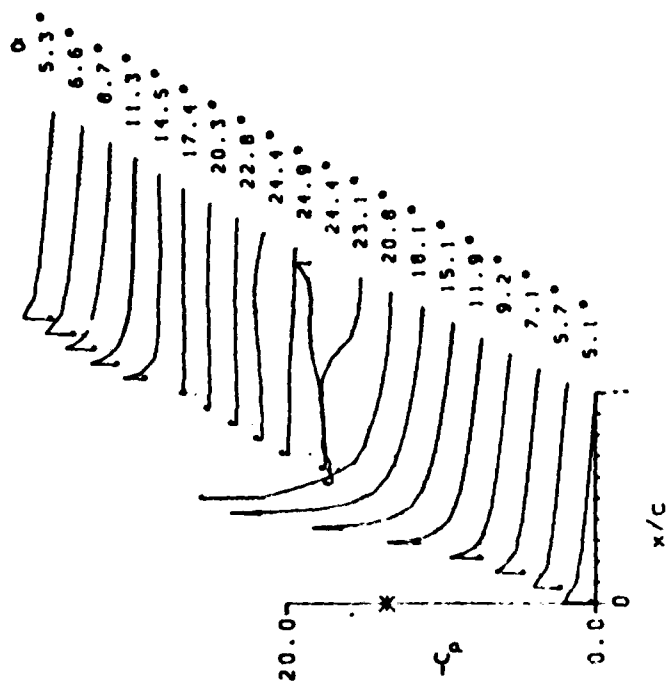
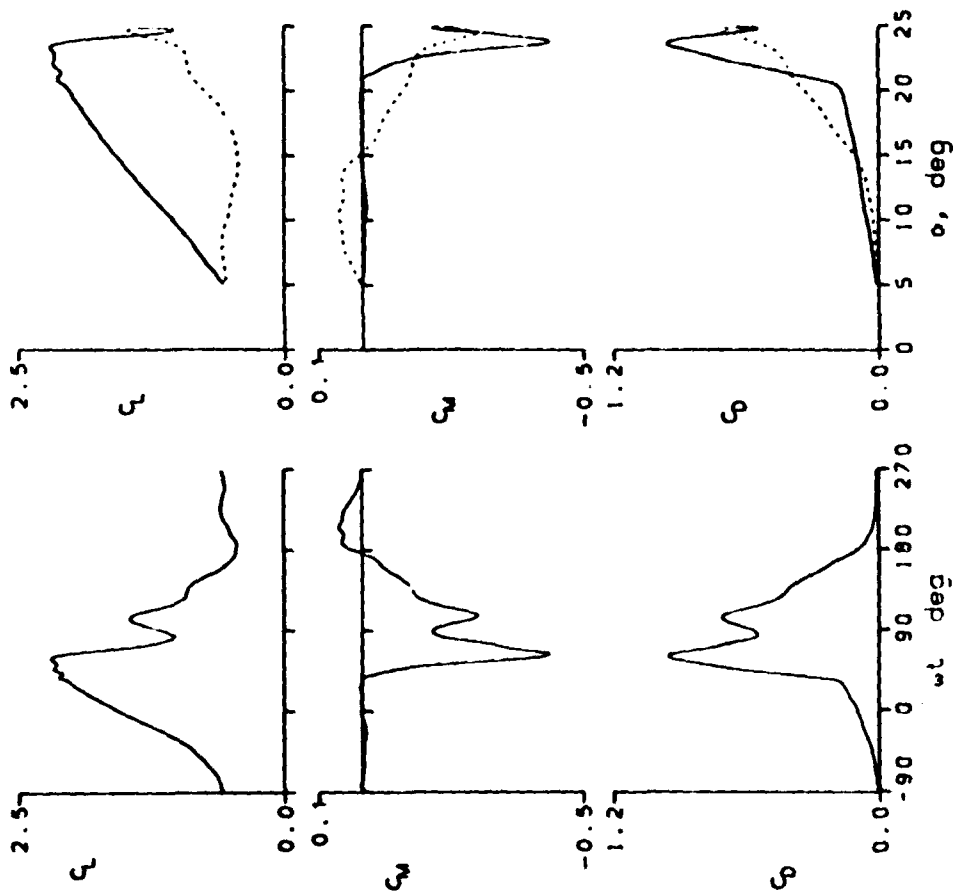


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 3203 $A_0 = 14.85^\circ$ $\alpha = 0.000$

$R_0 = 3.19 \text{ E6}$ $A_1 = 9.68^\circ$ $M = 0.248$

$C_{L,00} = 2.12$ $C_{M,00} = 0.42$ $C_{D,00} = 0.07$

$O_{L,00} = 21.9^\circ$ $C = 0.373$ $M_{00} = 1.142$

$O_{C_{L,00}} = 14.4^\circ$ $-C_{D,00} = 12.4$ $O_{M_{00}} = 18.3^\circ$

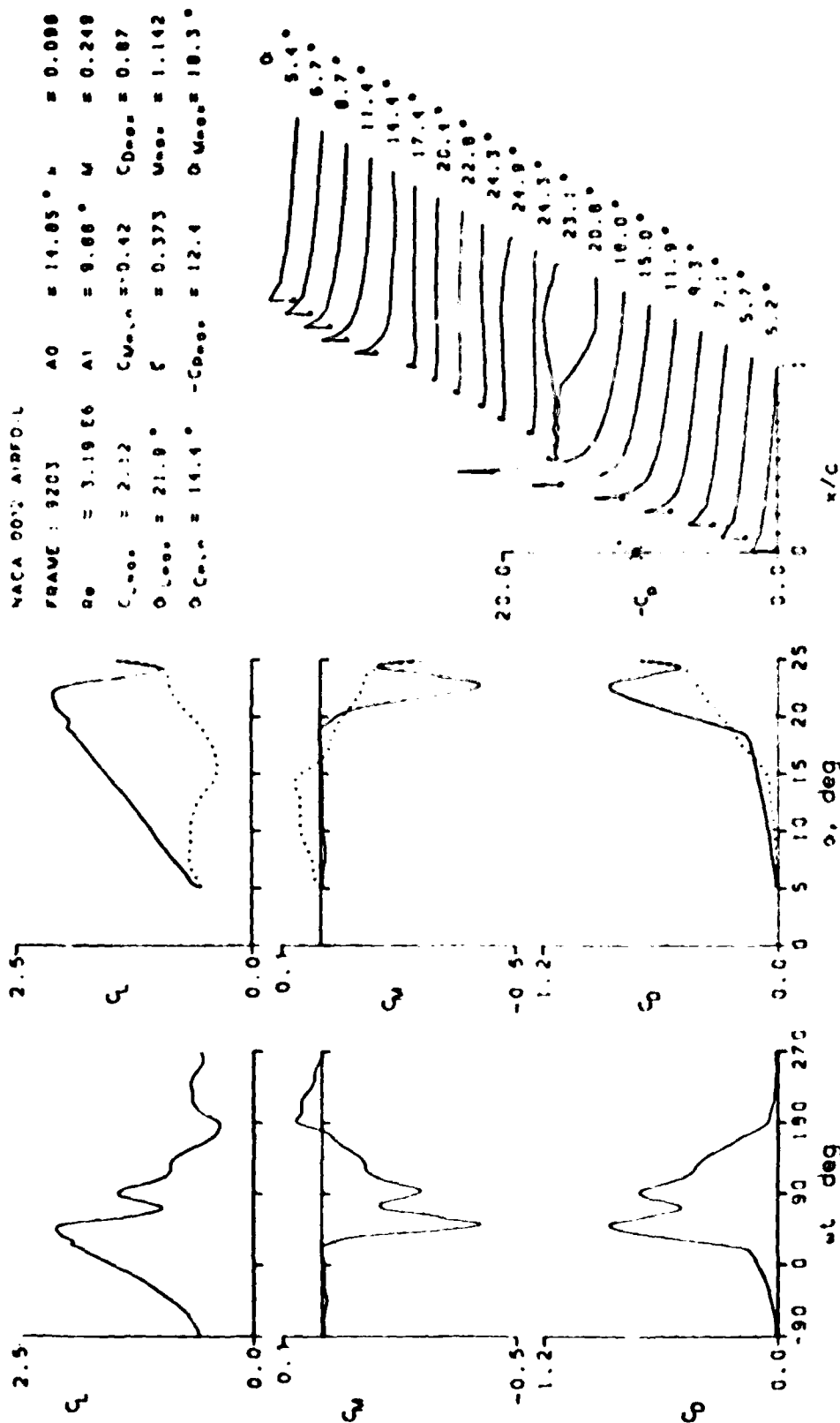


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 9259 $\Delta \theta = 14.04^\circ$ $\mu = 0.097$
 $R_\theta = 3.52 \times 10^6$ $\Delta \theta = 0.07^\circ$ $\mu = 0.200$
 $C_{L,0.0} = 2.01$ $C_{D,0.0} = 0.30$ $C_{D,0.0} = 0.70$
 $C_{L,0.0} = 20.5^\circ$ $C = 0.538$ $M_{0.0} = 1.214$
 $C_{L,0.0} = 14.9^\circ$ $-C_{D,0.0} = 10.5$ $C_{D,0.0} = 16.2^\circ$

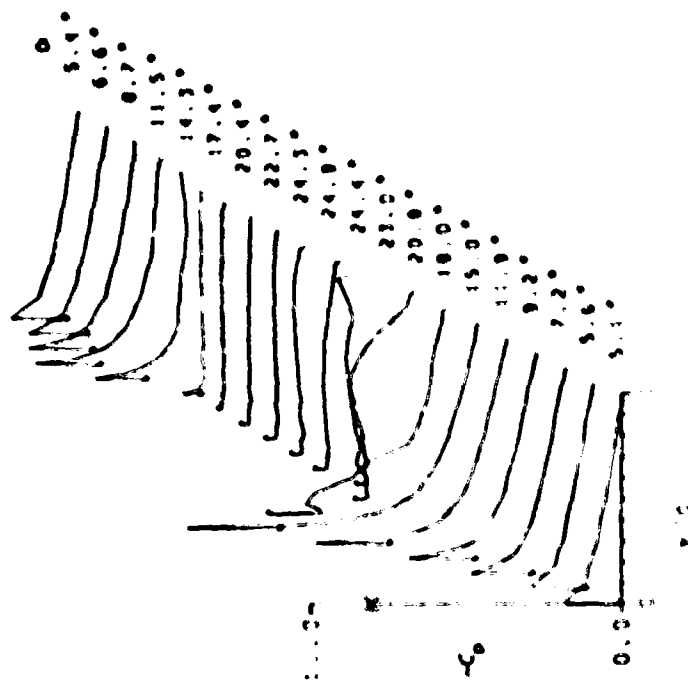
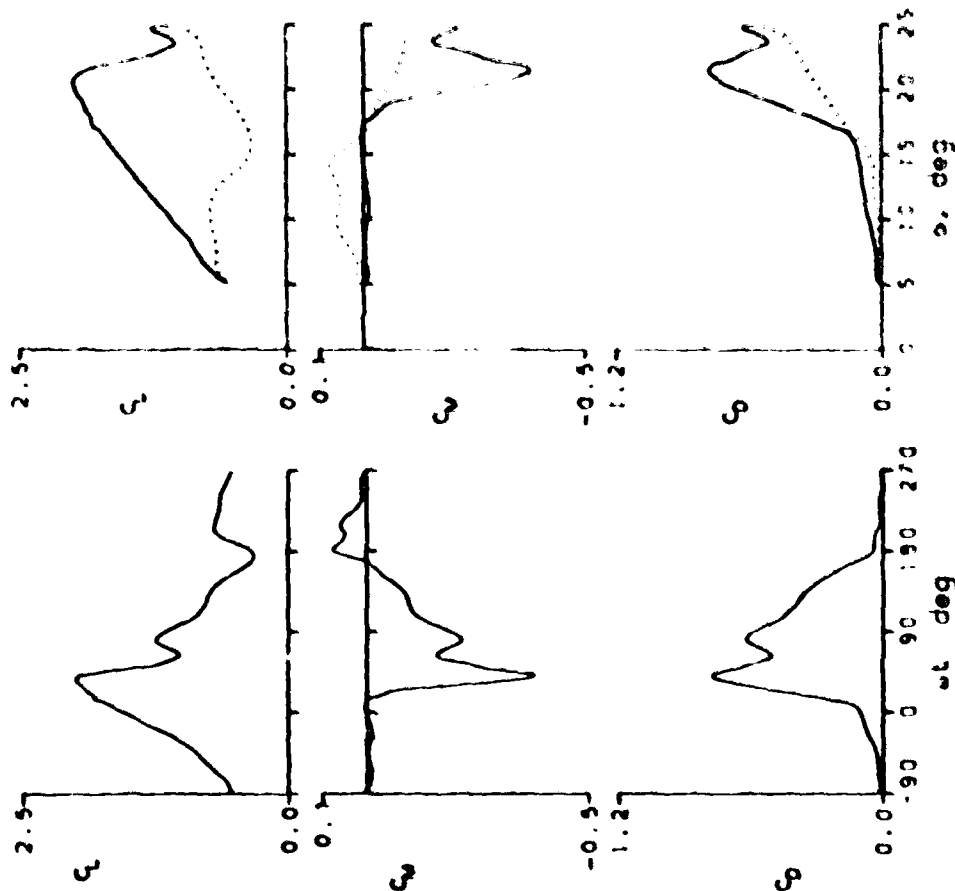


Figure 12.- Continued.

NACA 2302 A 8000

Reynolds	32.3	α	$\pm 10.06^\circ$	± 0.024	
α	± 3.61	α	$\pm 9.00^\circ$	± 0.204	
$C_{L,0.00}$	± 0.52	$C_{L,0.00}$	± 0.25	$C_{D,0.00}$	± 0.05
$C_{L,0.00}$	$\pm 10.7^\circ$	C	± 0.126	$M_{0.00}$	± 1.100
$C_{L,0.00}$	$\pm 10.7^\circ$	$C_{D,0.00}$	± 0.3	$C_{M,0.00}$	± 10.0

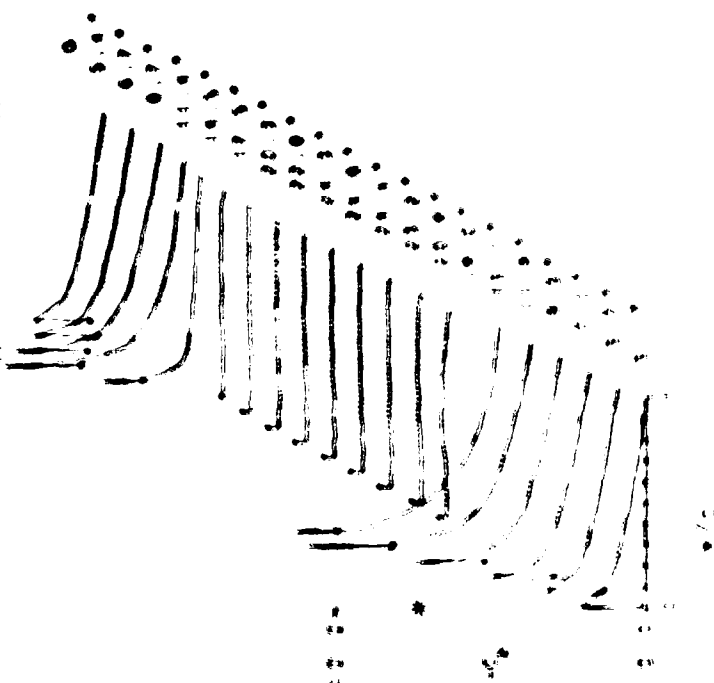
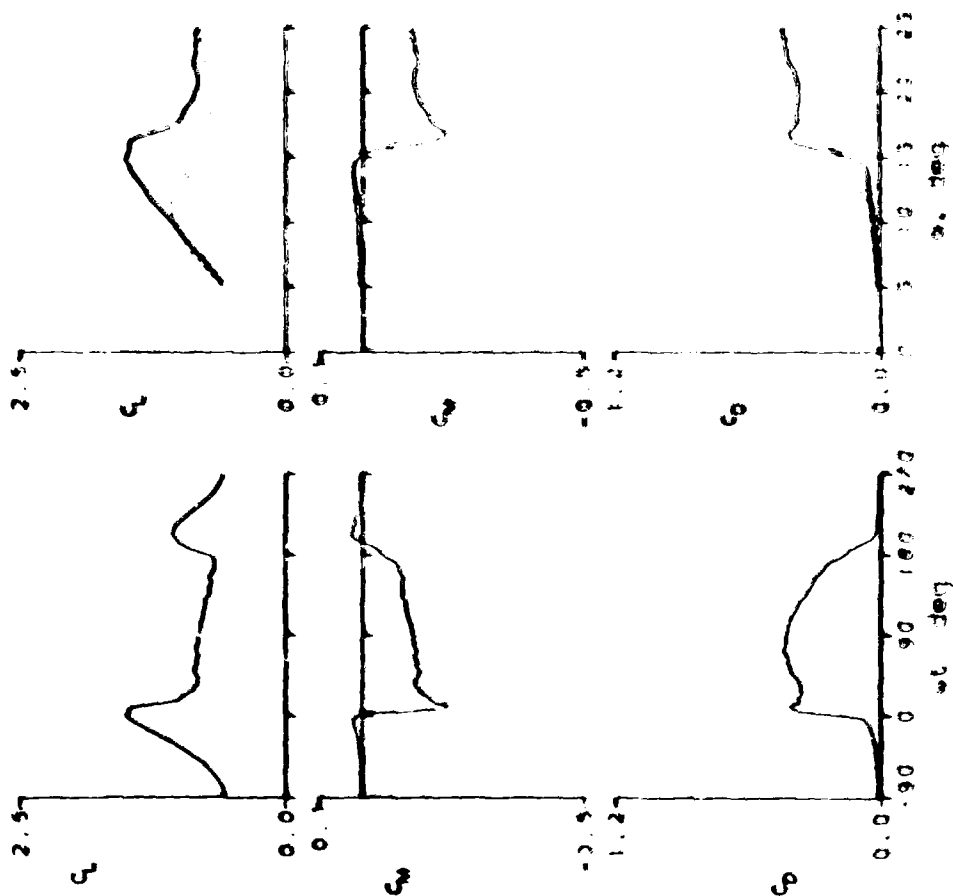


Figure 12. - Continued.

NACA 0012 Aircfoil
 FRAME 32 4 ΔZ = 1.04" Δ = 0.040
 $\Delta\theta$ = 3.37 deg Δt = 3.95" ω = 0.202
 C_{Dmax} = 0.26 C_{Dmax} = 0.53
 C_{Lmax} = 1.15 C_{Lmax} = 1.215
 C_{Lmax} = 1.15 C_{Lmax} = 1.215

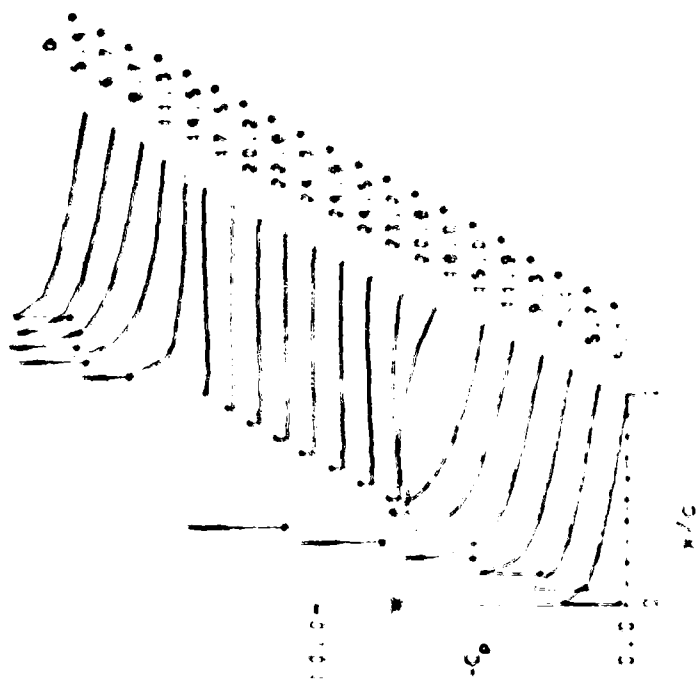
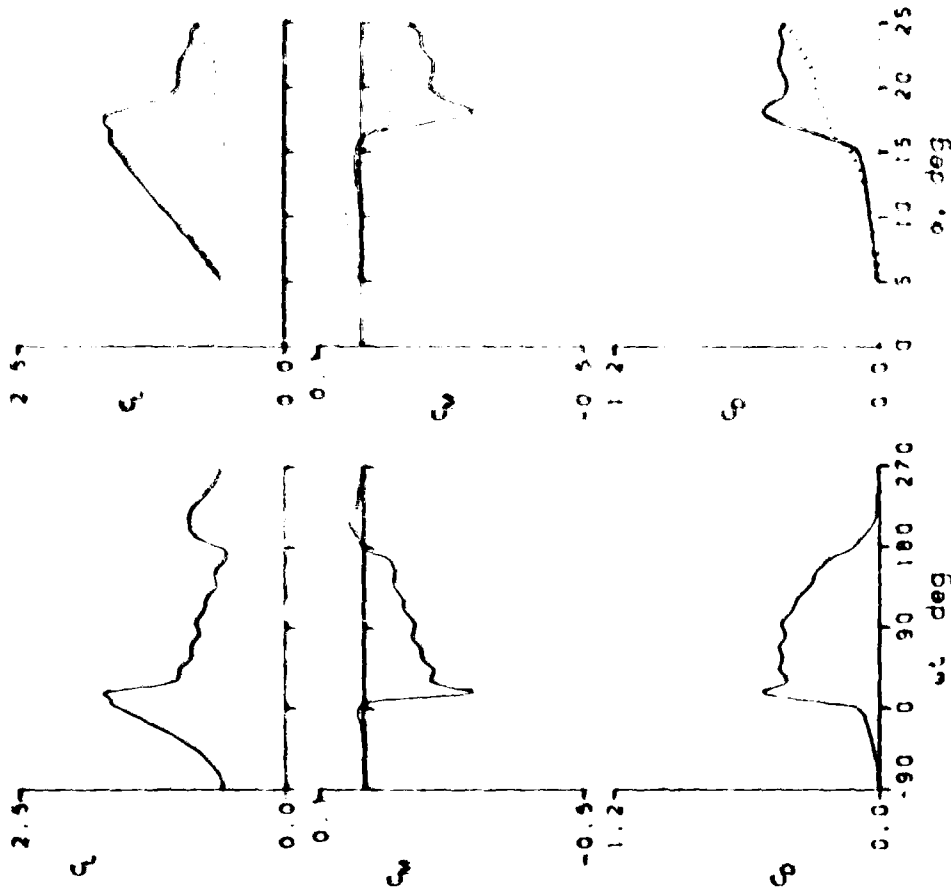


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 9217 $A_0 = 14.84^\circ$ $\mu = 0.098$
 $Re = 3.55 \times 10^6$ $A_1 = 9.89^\circ$ $M = 0.290$
 $C_{Lmax} = 2.08$ $C_{Mmin} = -0.32$ $C_{Dmax} = 0.67$
 $\alpha_{Lmax} = 19.8^\circ$ $\xi = 0.534$ $\alpha_{max} = 1.232$
 $\alpha_{Caln} = 14.4^\circ$ $-C_{Dmax} = 9.9$ $\alpha_{Mmax} = 15.6^\circ$

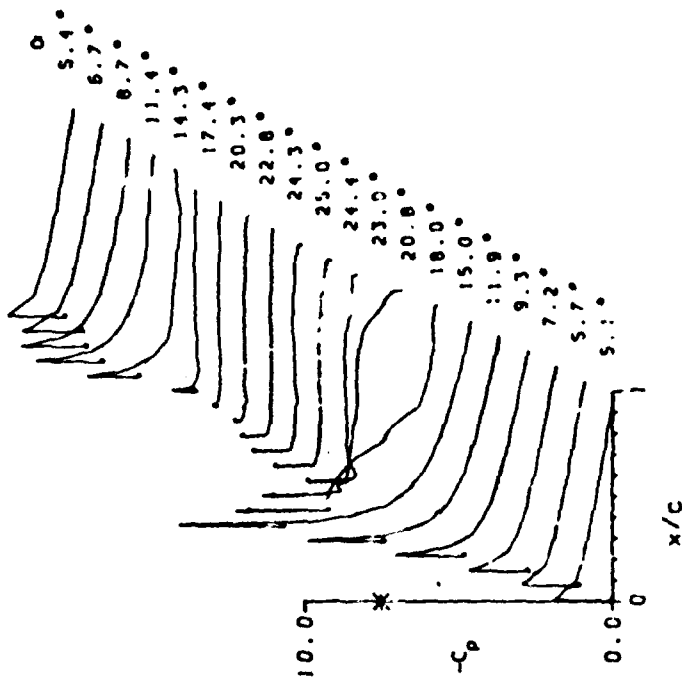
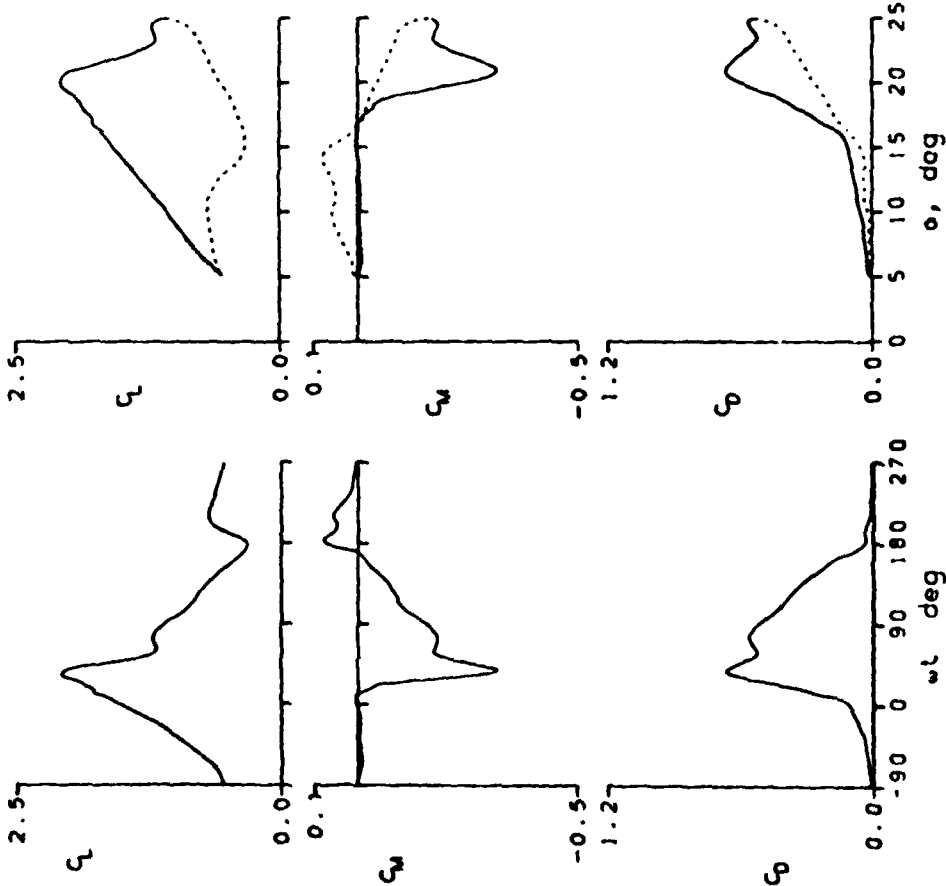
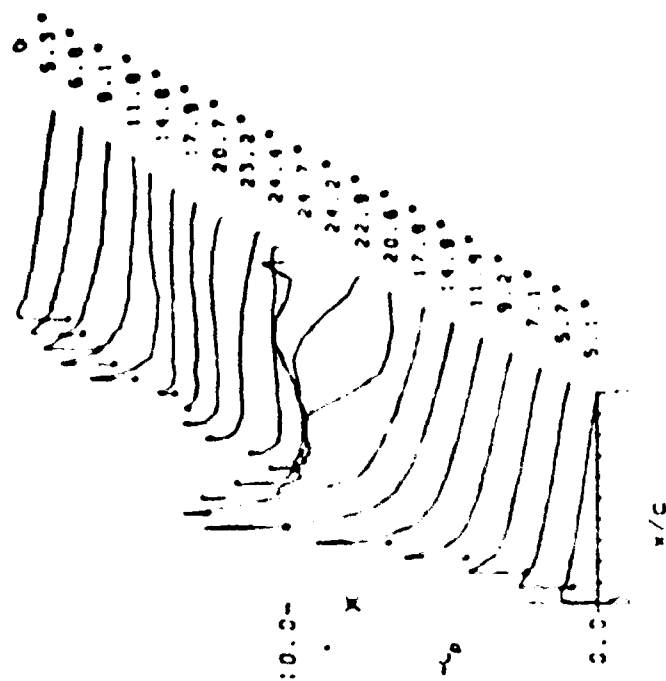
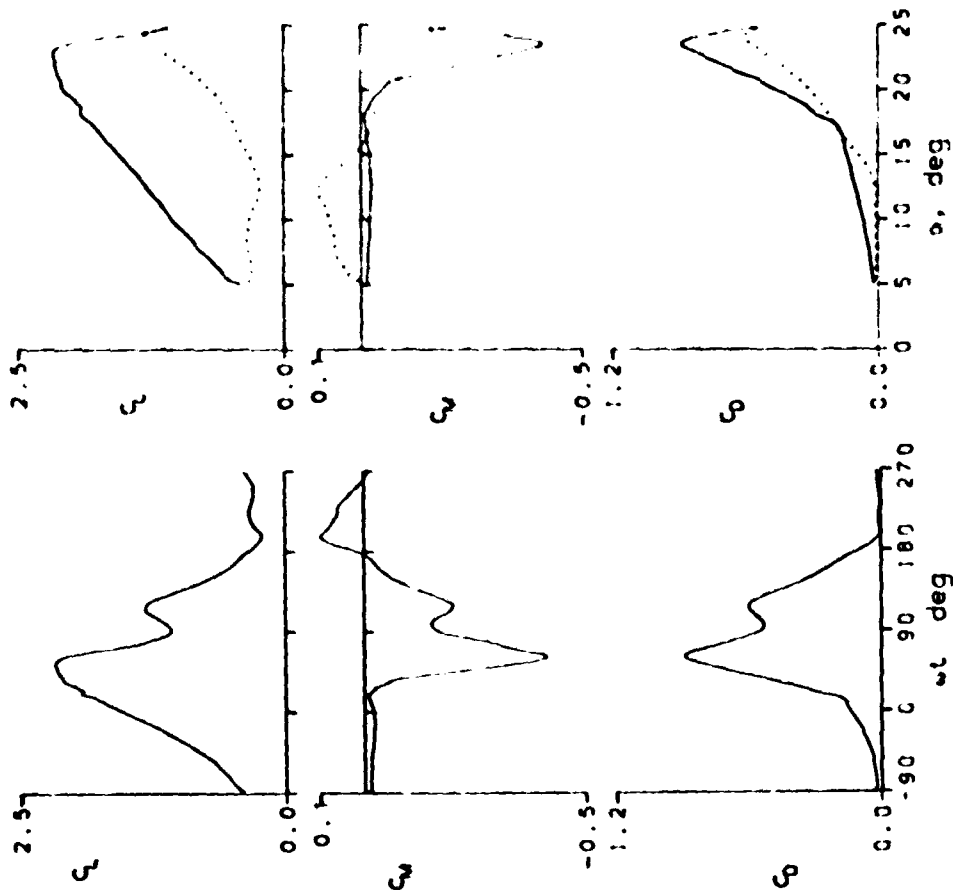


Figure 12.- Continued.

NACA 0012 AIRFOIL
 PRANDTL : 9210 $AC = 14.81^\circ$ $\alpha = 0.151$
 $Re = 2.45 \times 10^6$ $A' = 9.00^\circ$ $M = 0.283$
 $C_{L,0.0} = 2.17$ $C_{M,0.0} = 0.42$ $C_{D,0.0} = 0.09$
 $C_{L,max} = 22.7^\circ$ $C = 0.456$ $Mach = 1.224$
 $C_{L,0.0} = 14.6^\circ$ $-C_{D,0.0} = 10.4$ $C_{M,0.0} = 17.0^\circ$



NACA 6512 AIRFOIL
 FRAME : 9221
 $A_0 = 9.86^\circ$ $h = 0.010$
 $R_0 = 3.67 \text{ E6}$ $A_1 = 9.90^\circ$ $W = 0.302$
 $C_{L_{max}} = 1.41$ $C_{M_{min}} = -0.14$ $C_{D_{max}} = 0.34$
 $\alpha_{L_{max}} = 14.0^\circ$ $\zeta = 0.000$ $M_{max} = 1.184$
 $\alpha_{C_{L_{min}}} = 9.5^\circ$ $-C_{D_{min}} = 8.7$ $\alpha_{M_{max}} = 13.3^\circ$

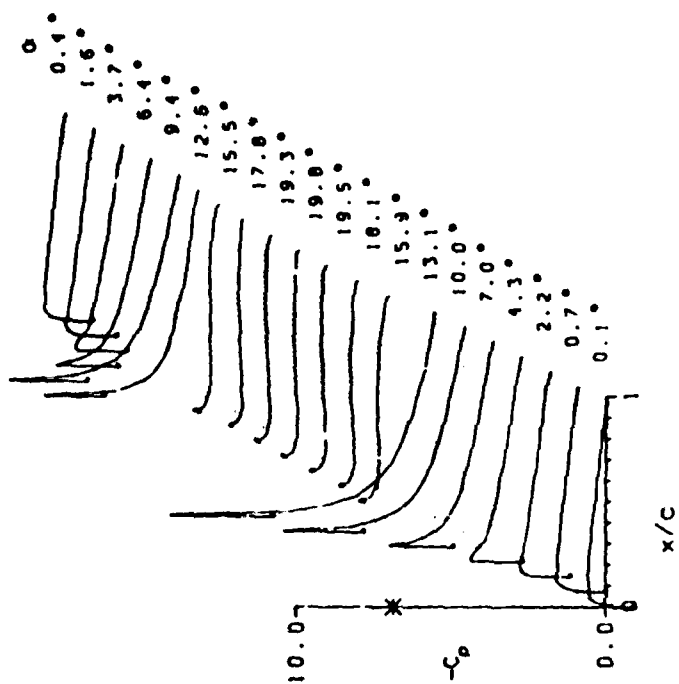
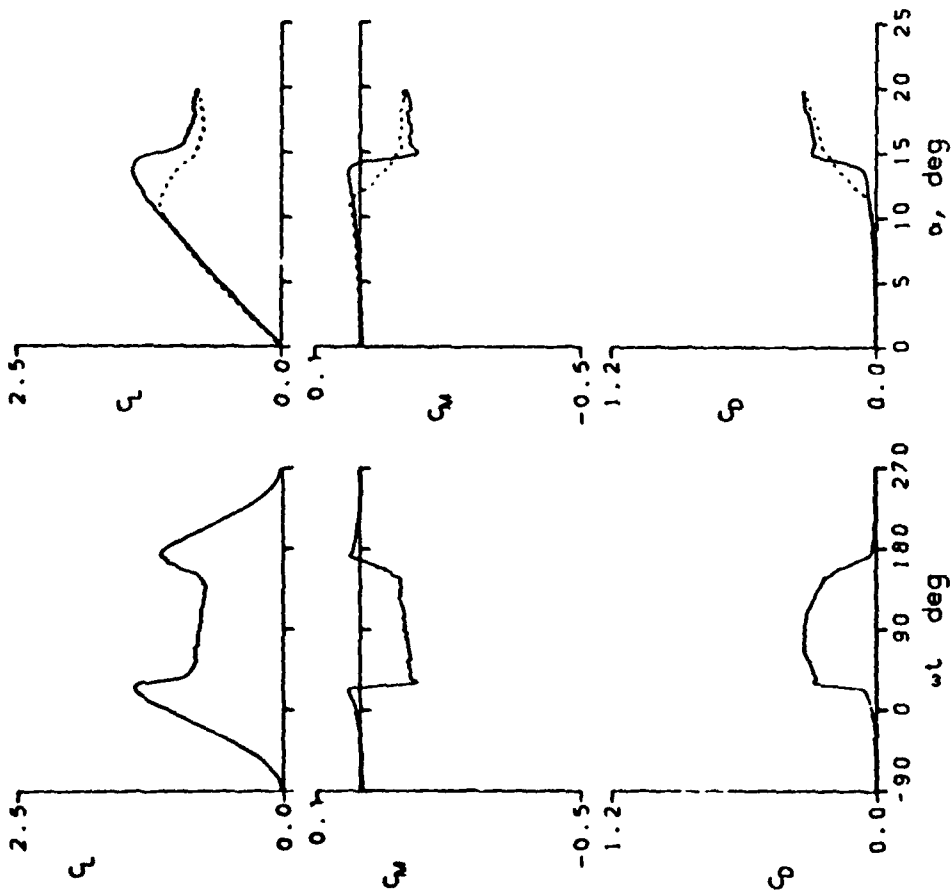


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 9222	AD = 9.84°	h = 0.024
Re = 3.66 E6	A1 = 9.88°	M = 0.302
CLmax = 1.57	CMmin = -0.18	CDmax = 0.39
αLmax = 15.3°	ξ = 0.042	Mmax = 1.220
αCPmin = 9.4°	-CDmax = 9.0	αMmax = 13.9°

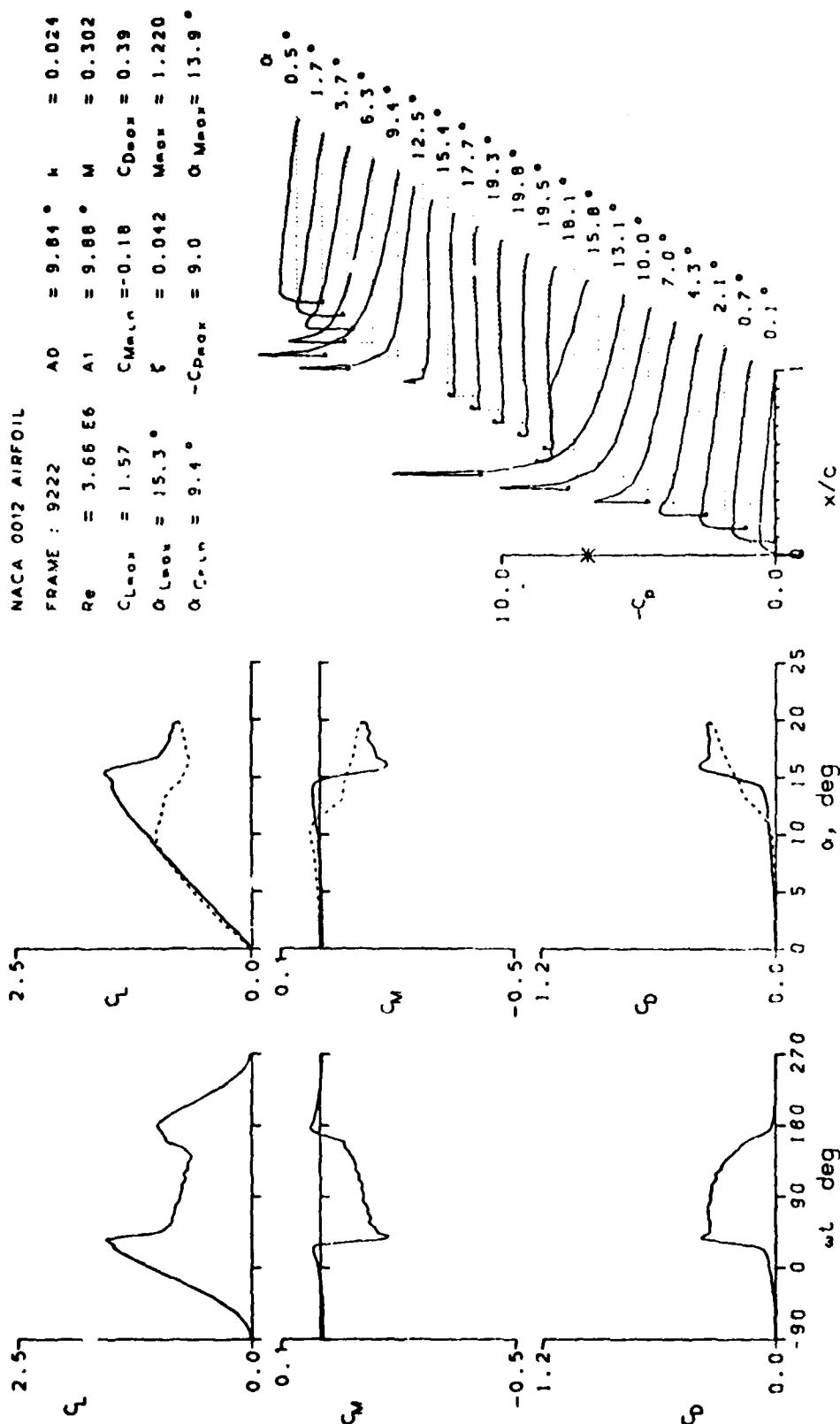


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 9223 $A_0 = 9.83^\circ$ $k = 0.048$
 $Re = 3.65 \times 10^6$ $A' = 9.88^\circ$ $M = 0.302$
 $C_{Lmax} = 1.68$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.44$
 $\alpha_{Lmax} = 16.4^\circ$ $\zeta = 0.140$ $M_{max} = 1.224$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 14.2^\circ$

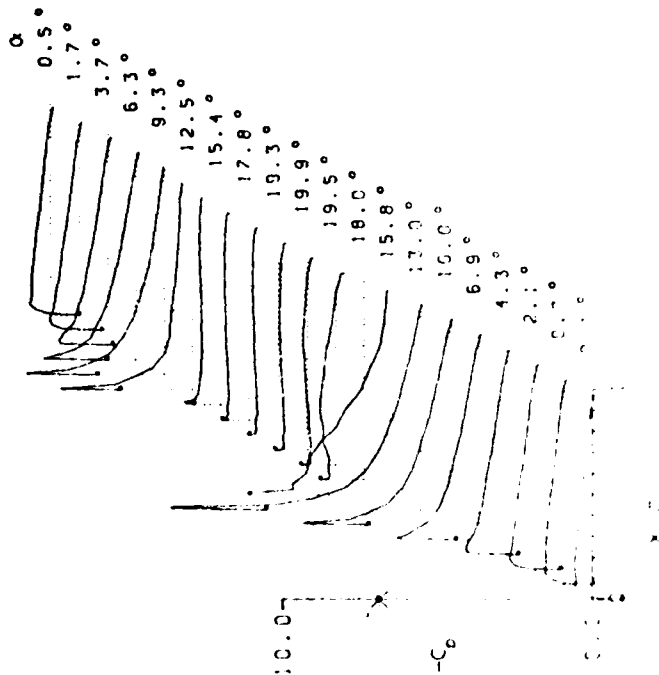
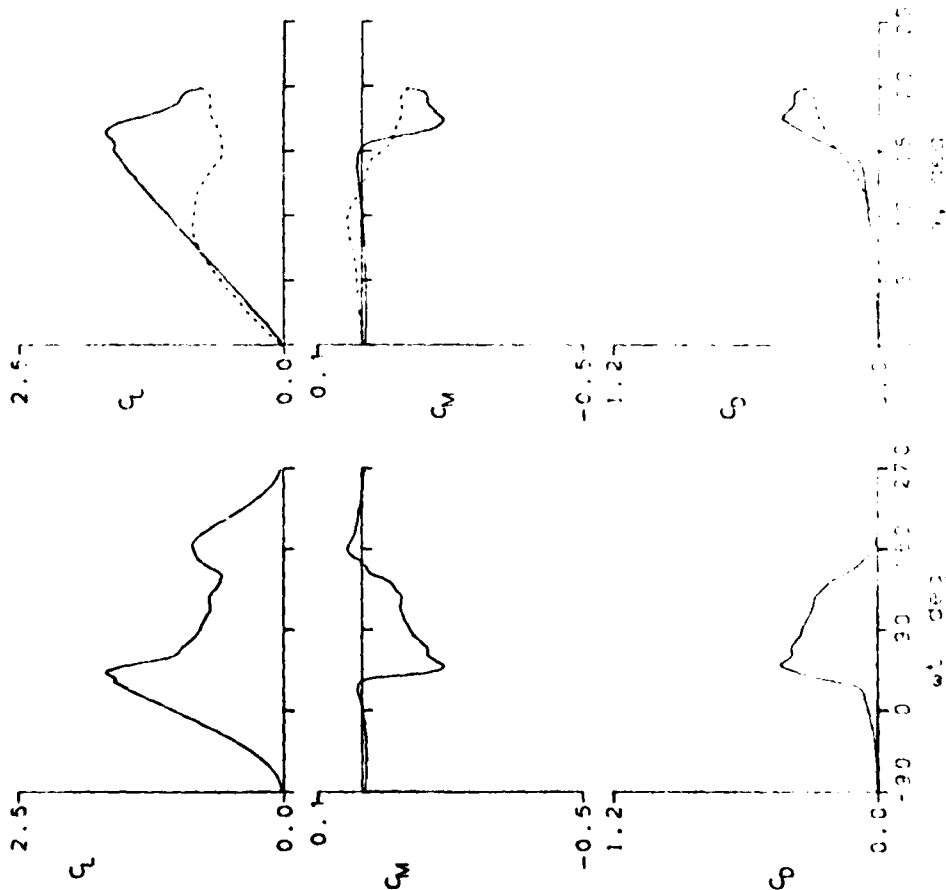


Figure 1. NACA 0012 airfoil.

NACA 0012 AIRFOIL

FRAME : 9307	$A_0 = 9.97^\circ$	$k = 0.145$
$Re = 3.67 \text{ E}6$	$A_1 = 9.88^\circ$	$M = 0.302$
$C_{Lmax} = 1.86$	$C_{Mmin} = -0.30$	$C_{Dmax} = 0.61$
$\alpha_{Lmax} = 19.1^\circ$	$\xi = 0.277$	$M_{max} = 1.238$
$\alpha_{Cmin} = 9.5^\circ$	$-C_{Dmax} = 9.1$	$\alpha_{Mmax} = 15.5^\circ$

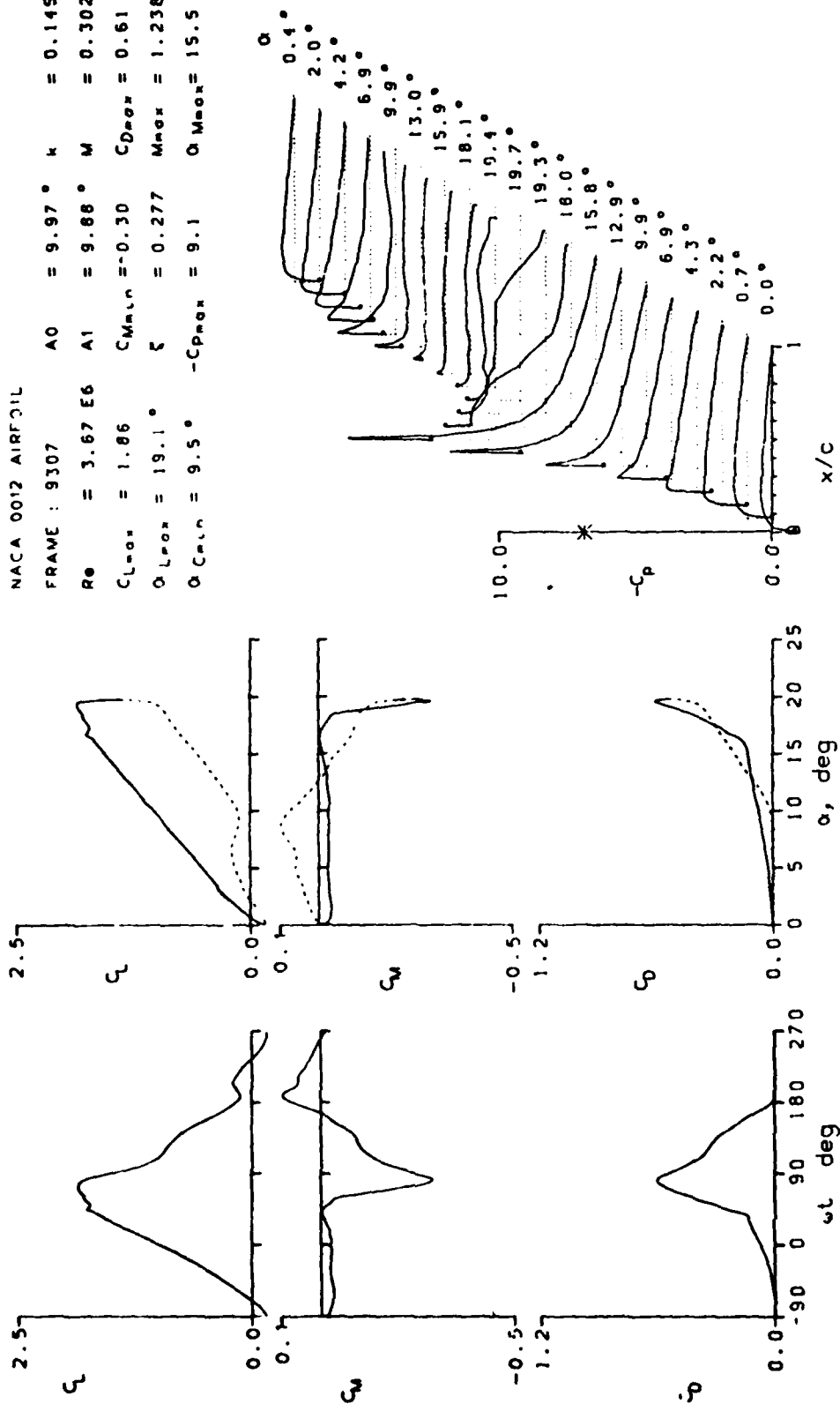


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10022	A0 = 11.84 °	k = 0.098
Re = 3.77 E6	At = 9.87 °	M = 0.301
C _{Lmax} = 1.90	C _{Mmin} = -0.30	C _{Dmax} = 0.63
α _{Lmax} = 19.2 °	ξ = 0.326	M _{max} = 1.226
α _{Cmin} = 11.4 °	-C _{Dmax} = 9.1	α _{Mmax} = 15.0 °

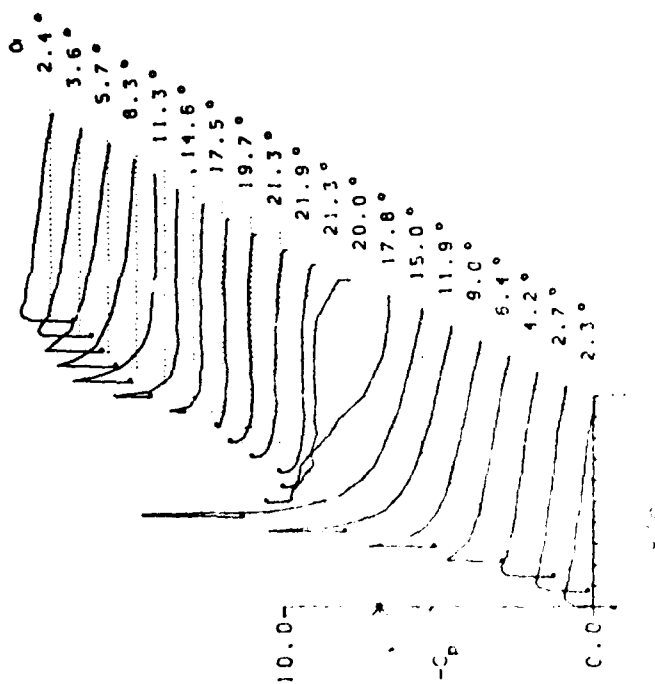
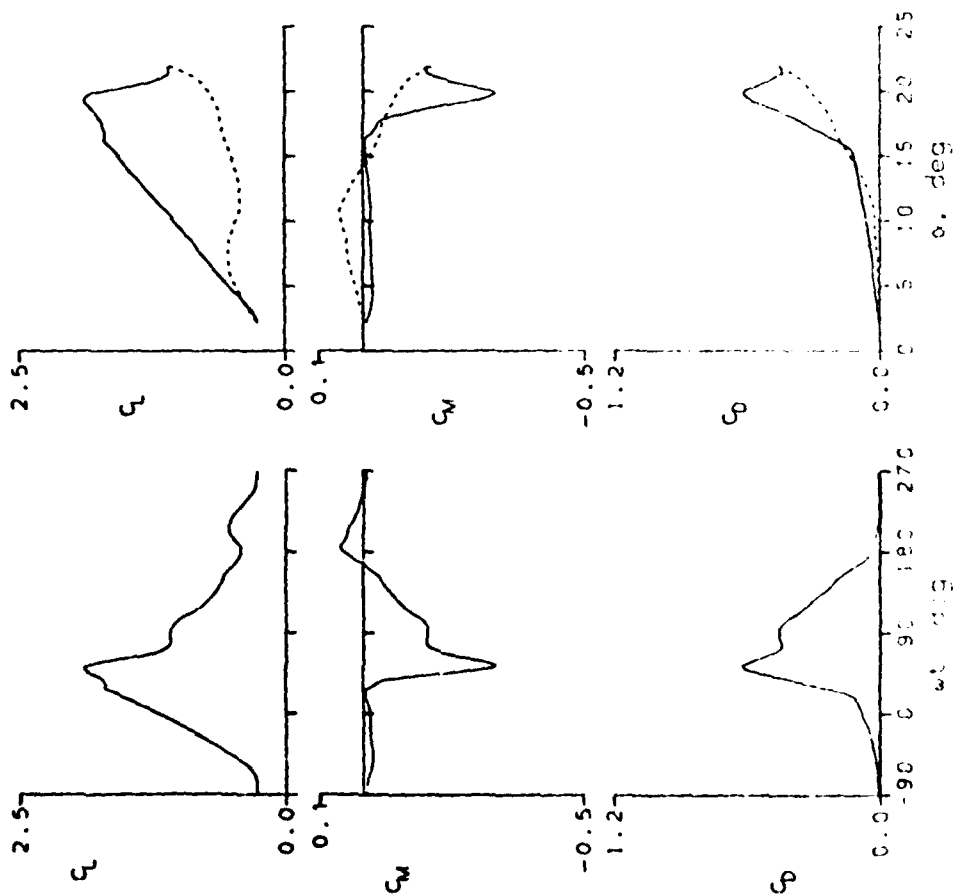


Figure 1. Experimental results.

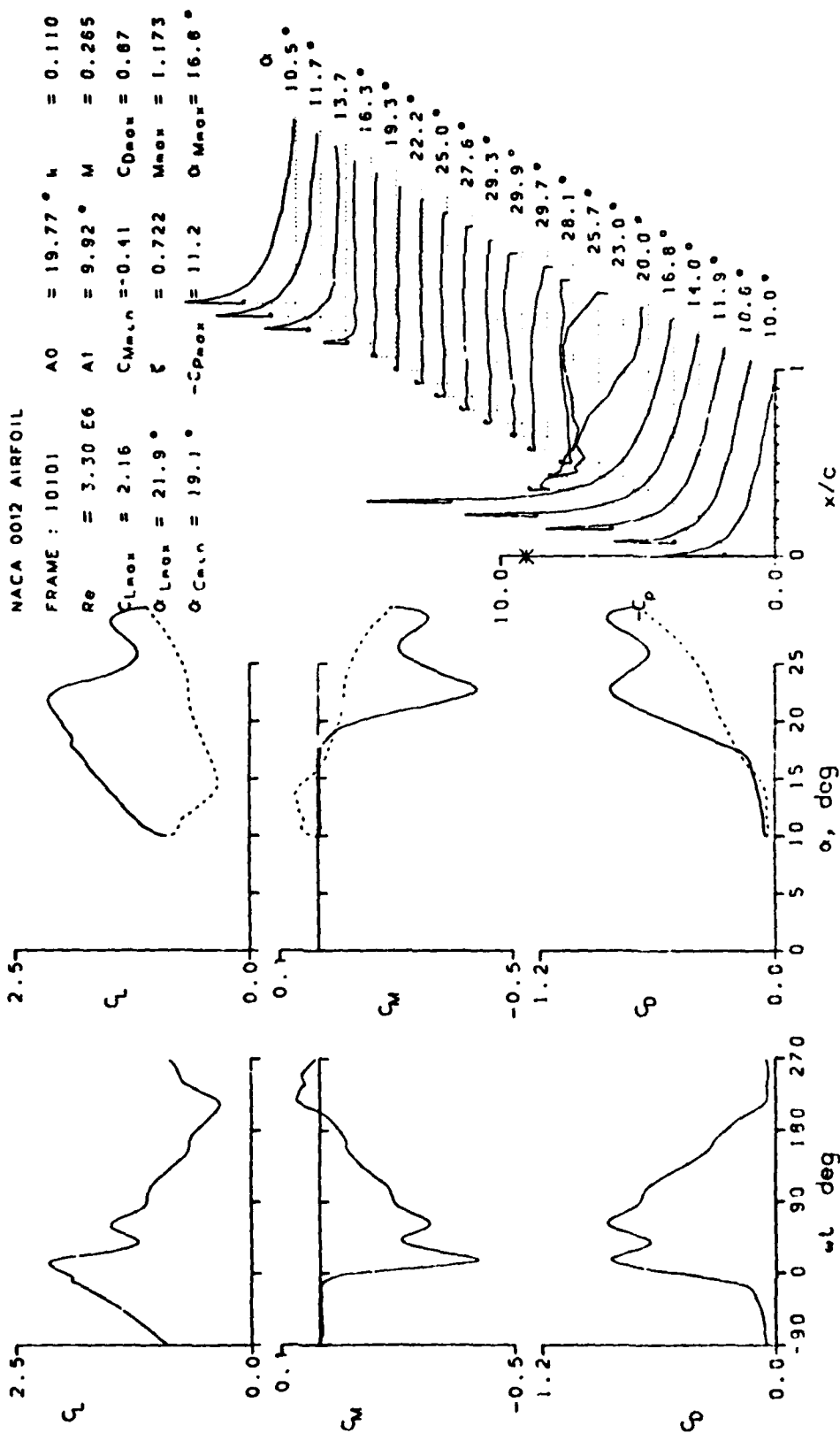


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10104	A0 = 11.90°	h = 0.048
Re = 3.71 E6	A1 = 7.90°	M = 0.302
CLmax = 1.66	CMmax = -0.14	CDmax = 0.40
OLmax = 16.3°	ξ = 0.042	Mmax = 1.217
OCmin = 11.5°	-CDmax = 9.0	QVmax = 14.3°

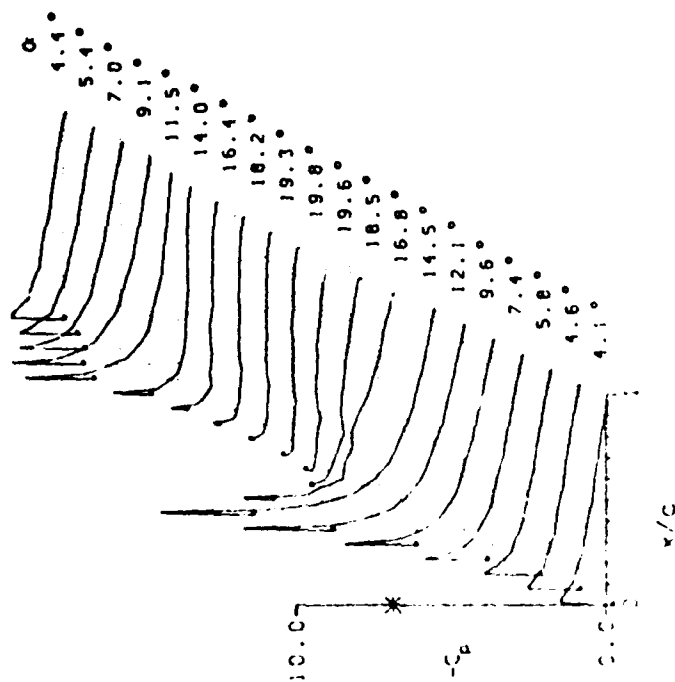
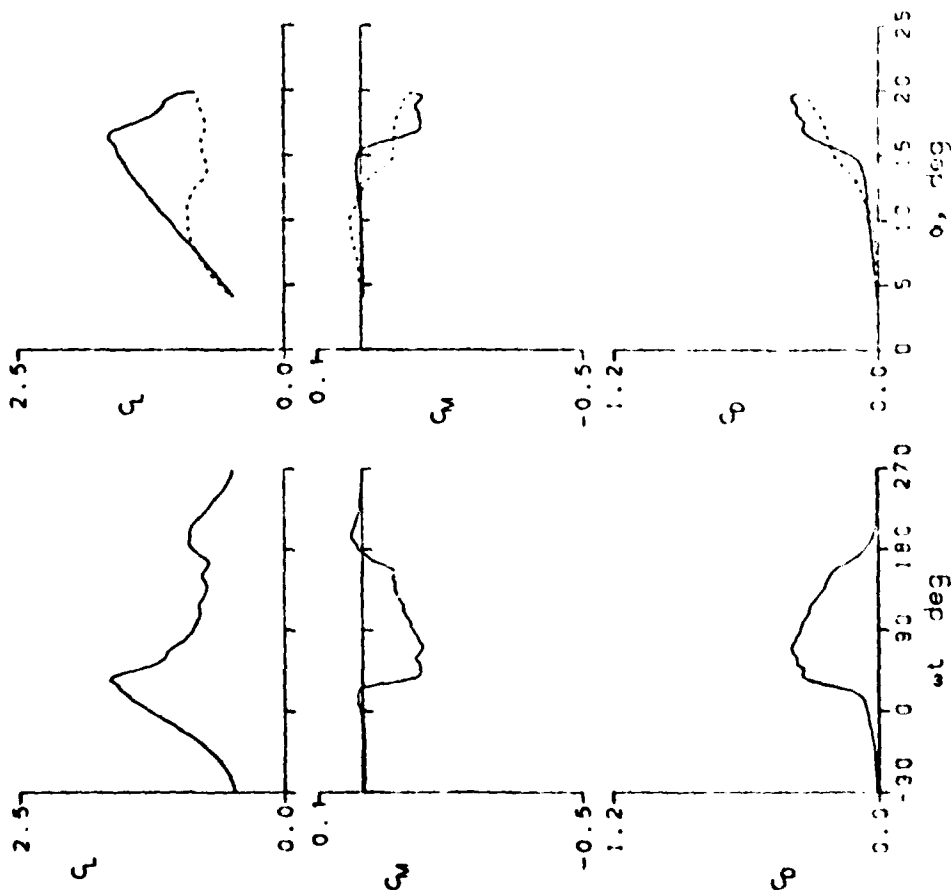


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10105 $\alpha_0 = 11.90^\circ$ $M = 0.097$
 $R_\theta = 3.8956$ $A_1 = 7.89^\circ$ $M = 0.302$
 $C_{L_{max}} = 1.76$ $C_{D_{min}} = 0.24$ $C_{D_{max}} = 0.53$
 $O_{L_{max}} = 18.0^\circ$ $\xi = 0.234$ $M_{max} = 1.217$
 $O_{C_{L_{min}}} = 11.5^\circ$ $-C_{D_{min}} = 9.0$ $O_{M_{max}} = 14.8^\circ$

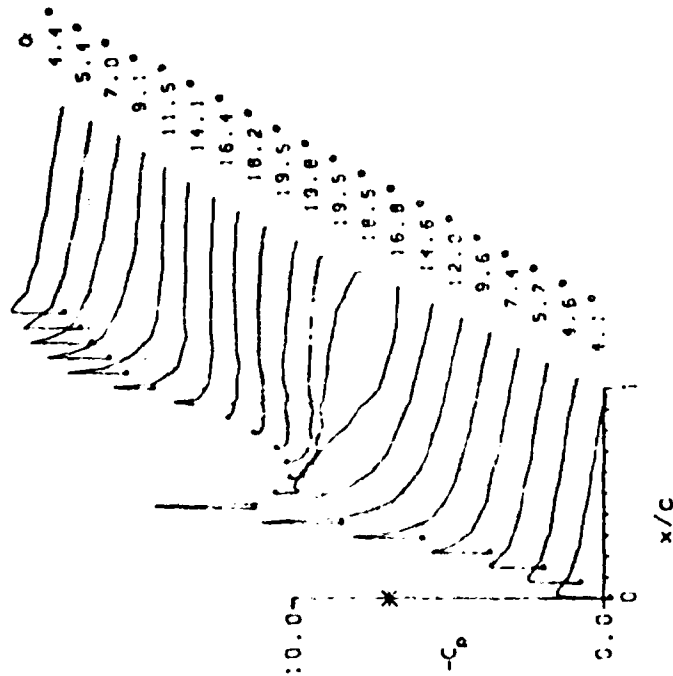
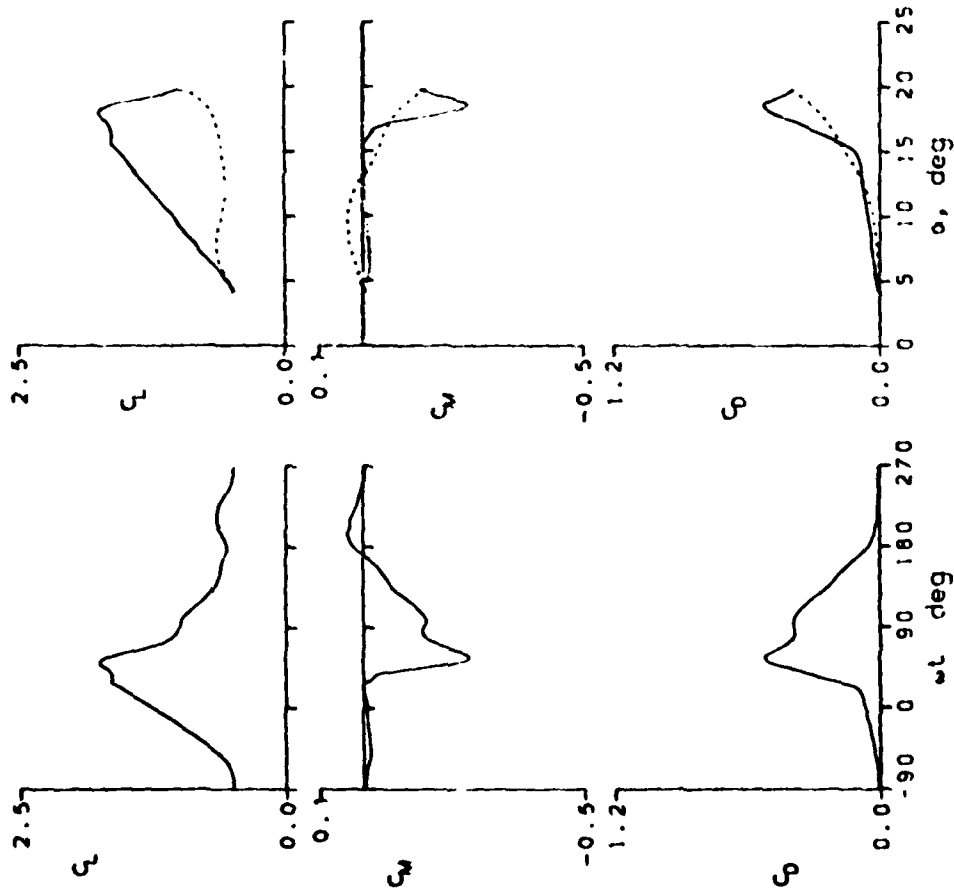


Figure 12.- Continued.

NACA 0012 A SEC -

FRAME = 10108 AC = 11.95" = 0.125
 Re = 3.6416 A' = 2.89" V = 0.296
 C_{l,0} = 0.97 C_{m,0} = 0.23 C_{D,0} = 0.64
 O L₀₀₀ = 13.1" C = 0.203 M₀₀₀ = 1.214
 O C_{0,0} = 11.7" -C_{0,0} = 9.3" O M_{0,0} = 15.4"

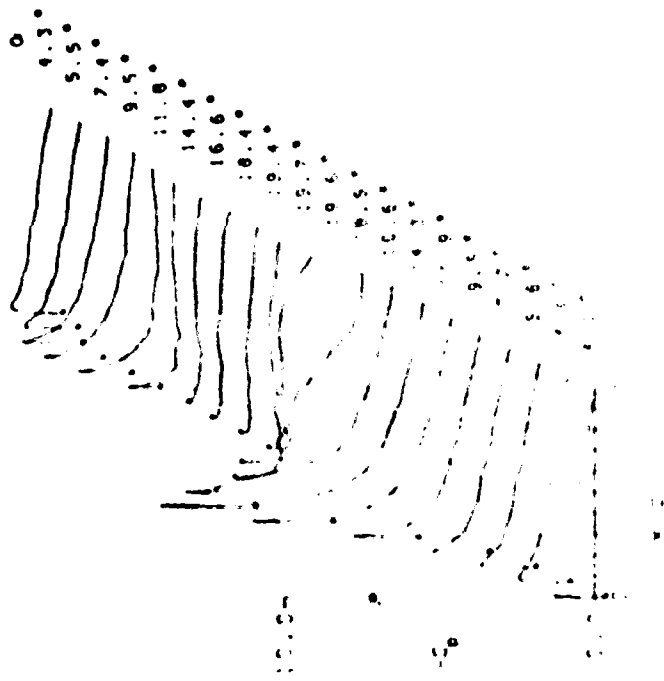
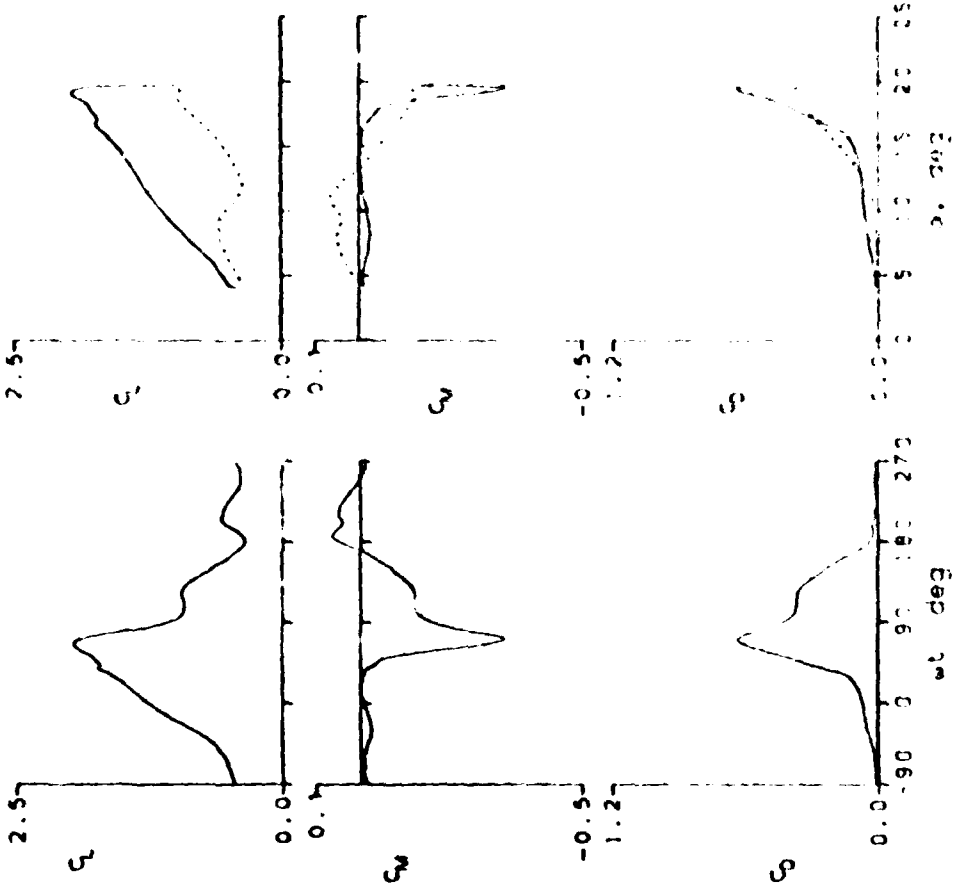


Figure 12.- Continued.

NACA 0012 A 512

RAUC	16.3	AC	14.97°	α	0.010
Re	3.9214	AC	4.91°	α	0.302
C _{Lmax}	1.29	C _{Dmax}	0.029	C _{Dmax}	0.27
C _{Lmax}	13.5	C	0.0048	C _{Dmax}	1.212
C _{Lmax}	14.3	C	0.0048	C _{Dmax}	14.0

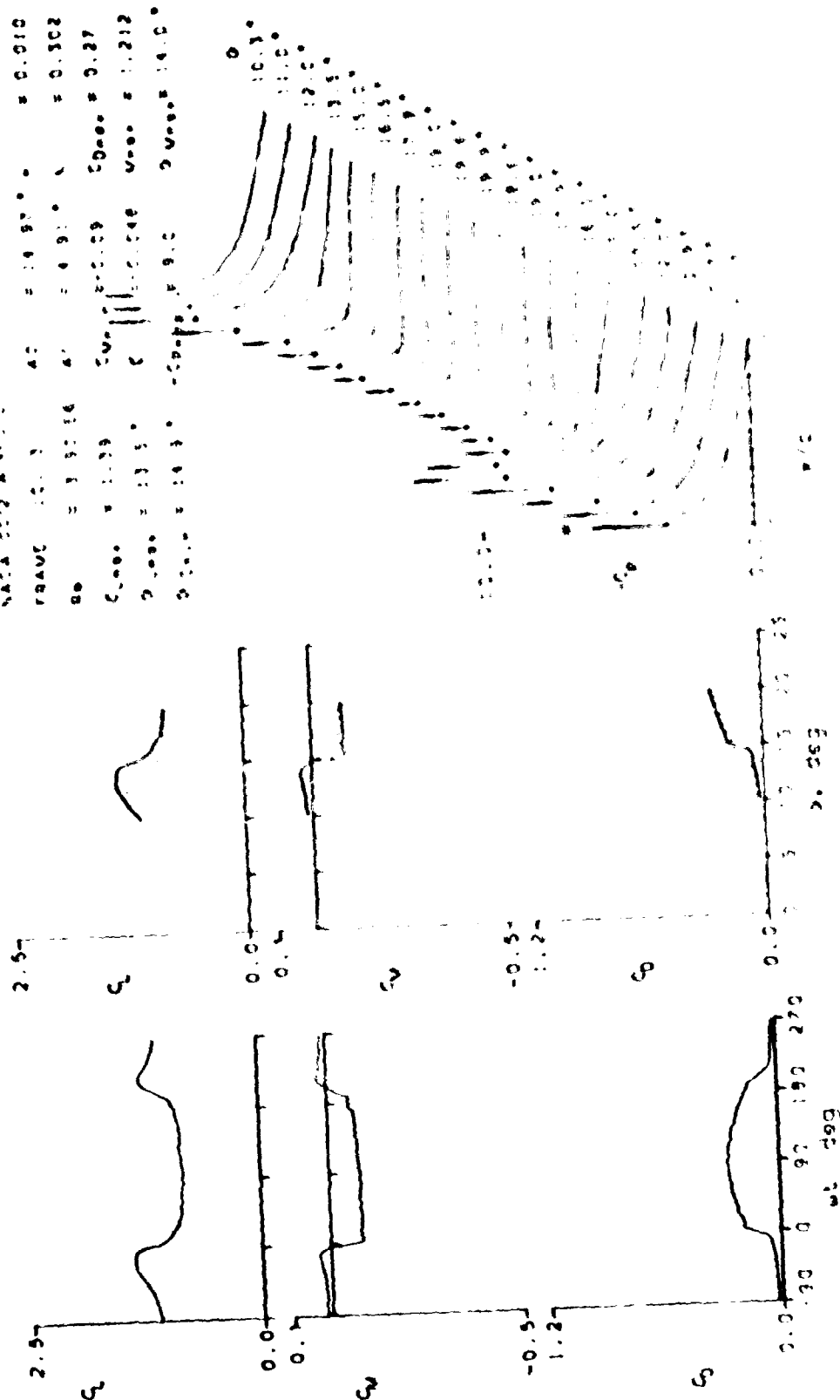


Figure 12- Continued.

NACA 2302 A 8100

FRAME	AC	α	α
$\alpha = 3.42$	$\alpha = 10.96$	$\alpha = 0.050$	
$\alpha = 3.42$	$\alpha = 10.96$	$\alpha = 0.295$	
$\alpha = 3.42$	$\alpha = 10.96$	$\alpha = 0.33$	
$\alpha = 3.42$	$\alpha = 10.96$	$\alpha = 1.236$	
$\alpha = 3.42$	$\alpha = 10.96$	$\alpha = 10.0$	

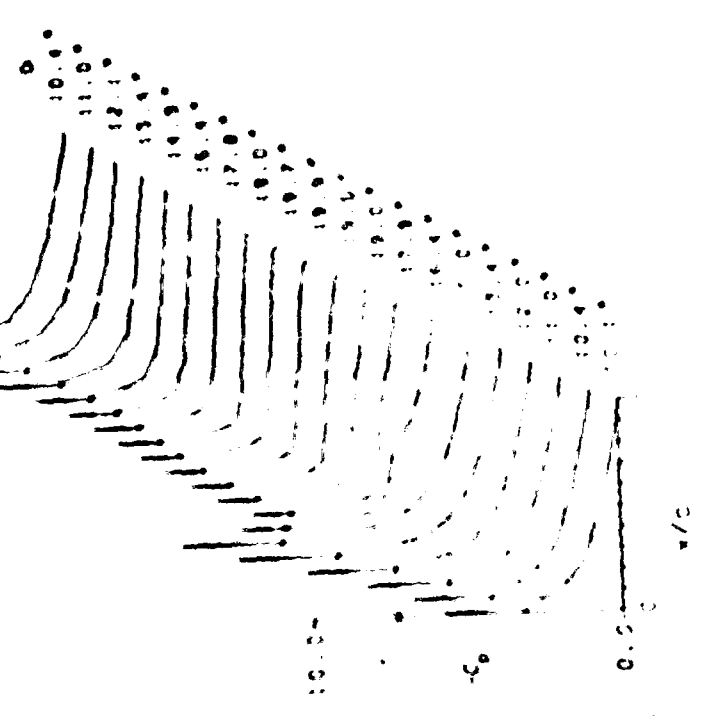
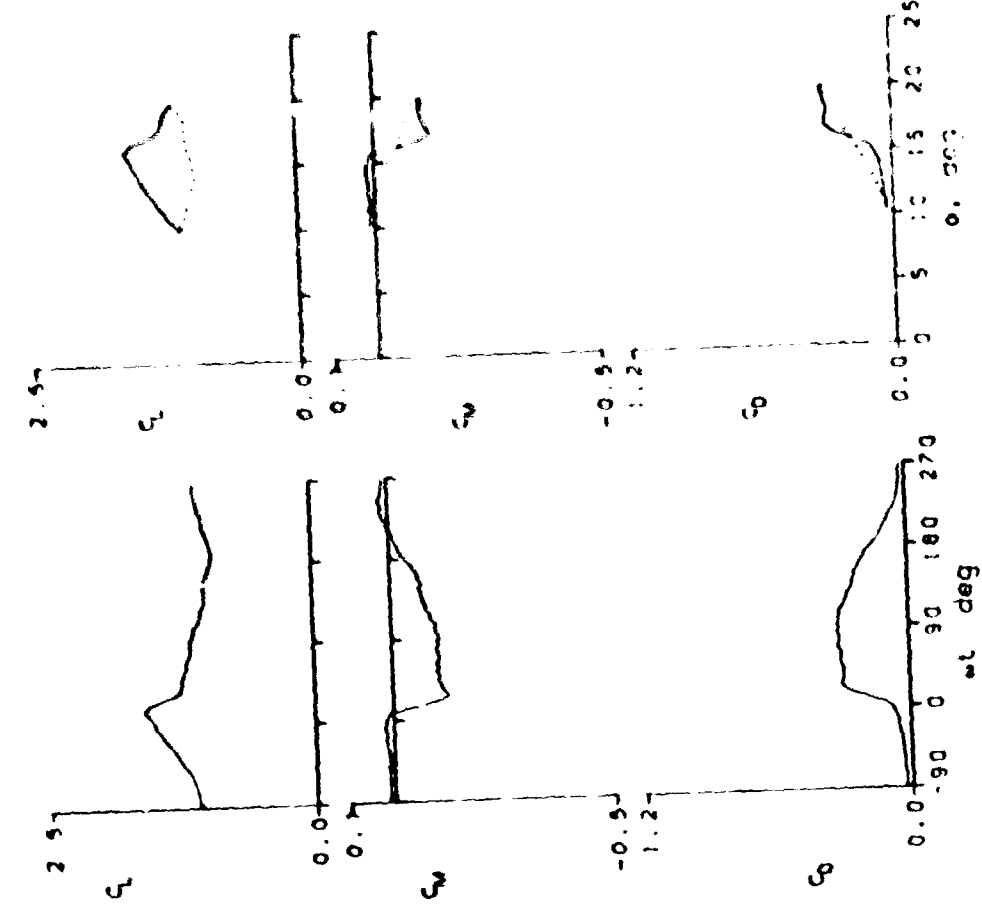


Figure 12.- Cont Inued.

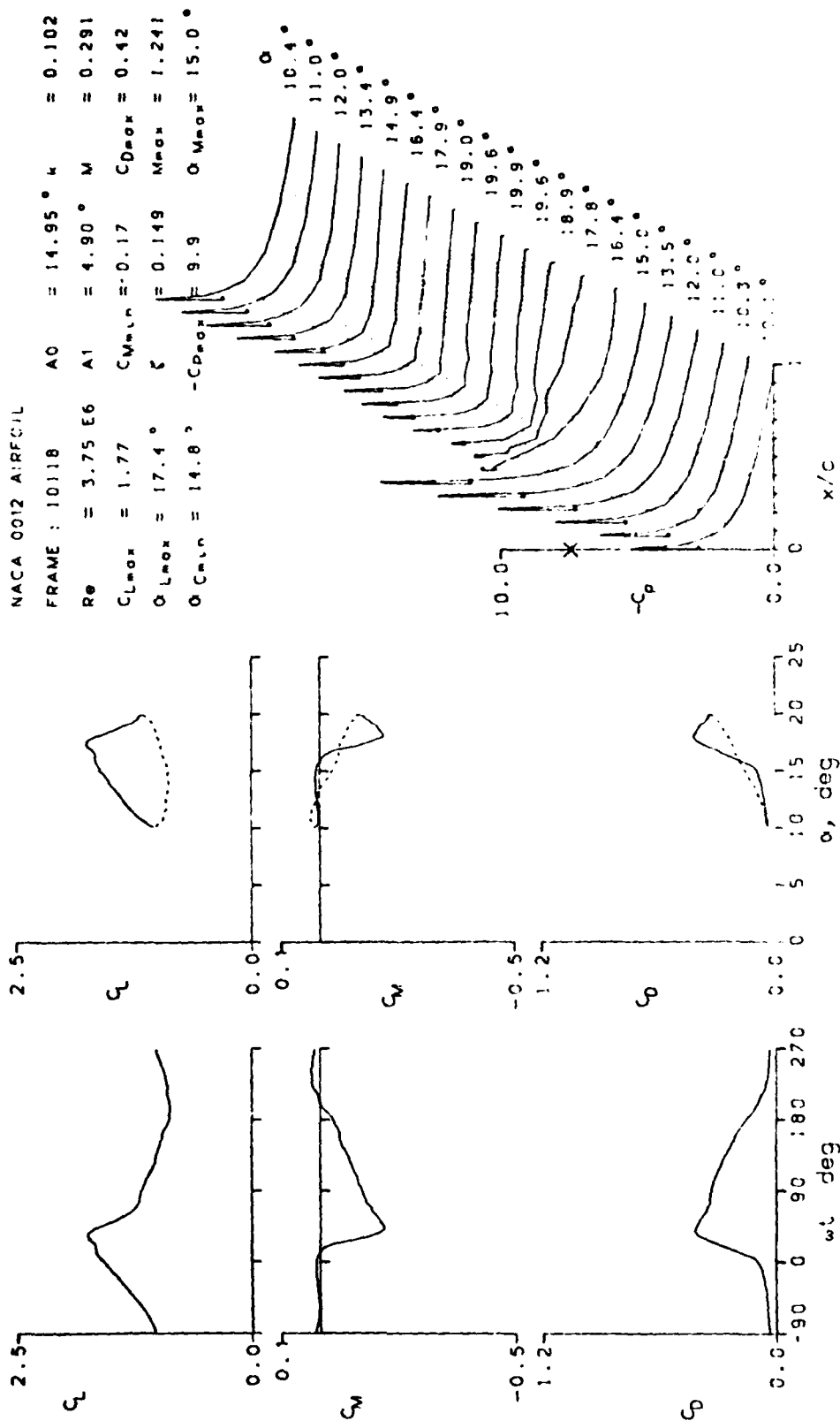


Figure 12.- Continued.

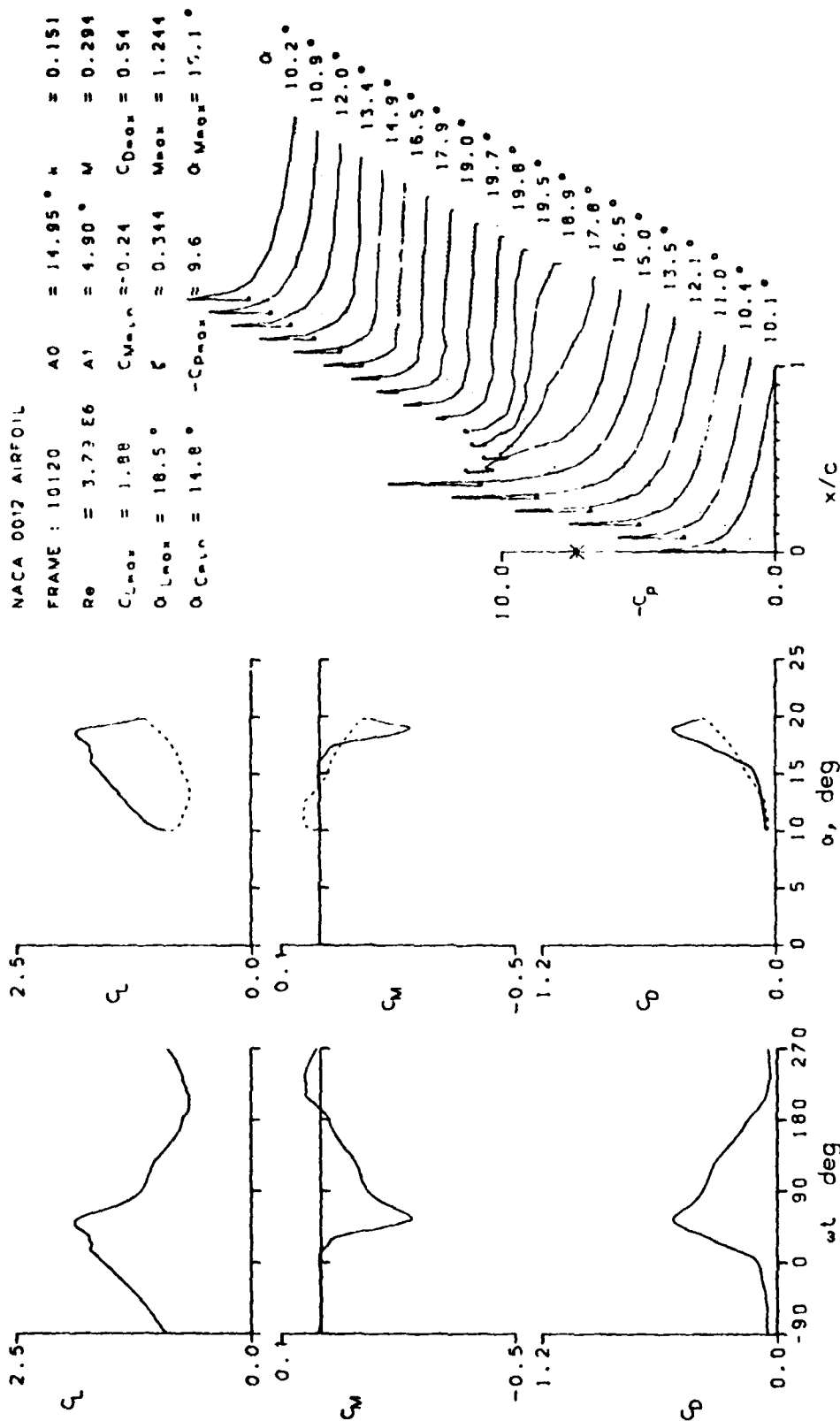


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10123 $A_0 = 14.96^\circ$ $\mu = 0.202$
 $Re = 3.76 E6$ $A_1 = 4.87^\circ$ $M = 0.293$
 $C_{Lmax} = 1.97$ $C_{Mmin} = -0.37$ $C_{Dmax} = 0.68$
 $\alpha_{Lmax} = 19.3^\circ$ $\xi = 0.145$ $M_{max} = 1.251$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 9.8$ $\alpha_{Mmax} = 15.8^\circ$

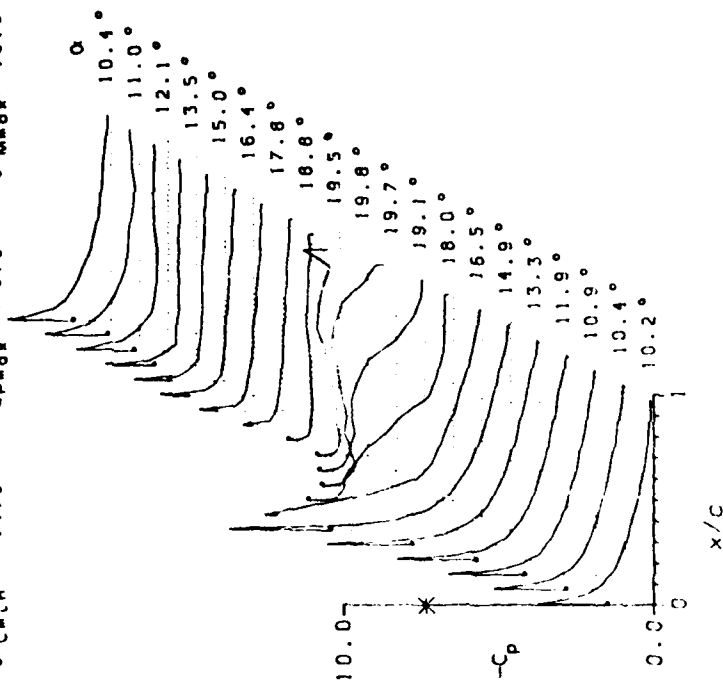
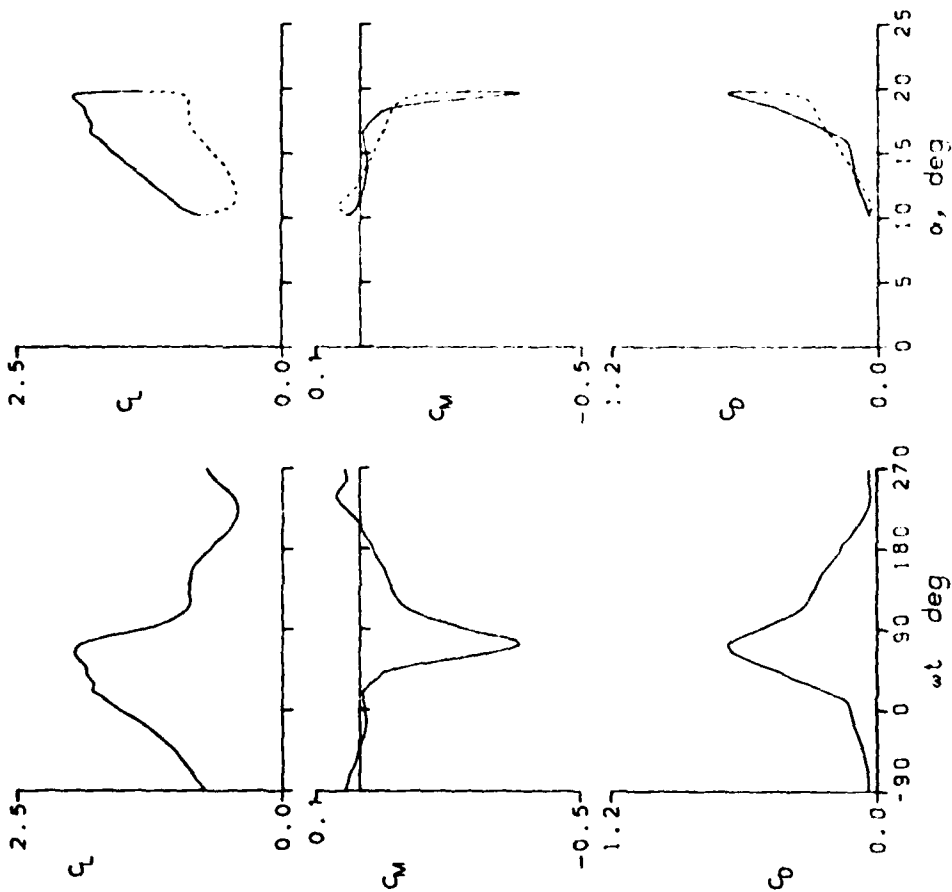


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10202	A0 = 9.95°	k = 0.010
Re = 3.66 E6	A1 = 4.90°	M = 0.301
$C_{Lmax} = 1.37$	$C_{Mmin} = -0.06$	$C_{Dmax} = 0.15$
$\alpha_{Lmax} = 13.6°$	$\zeta = -0.110$	$M_{max} = 1.219$
$\alpha_{Cmin} = 9.8°$	$-C_{pmax} = 9.0$	$\alpha_{Mmax} = 13.7°$

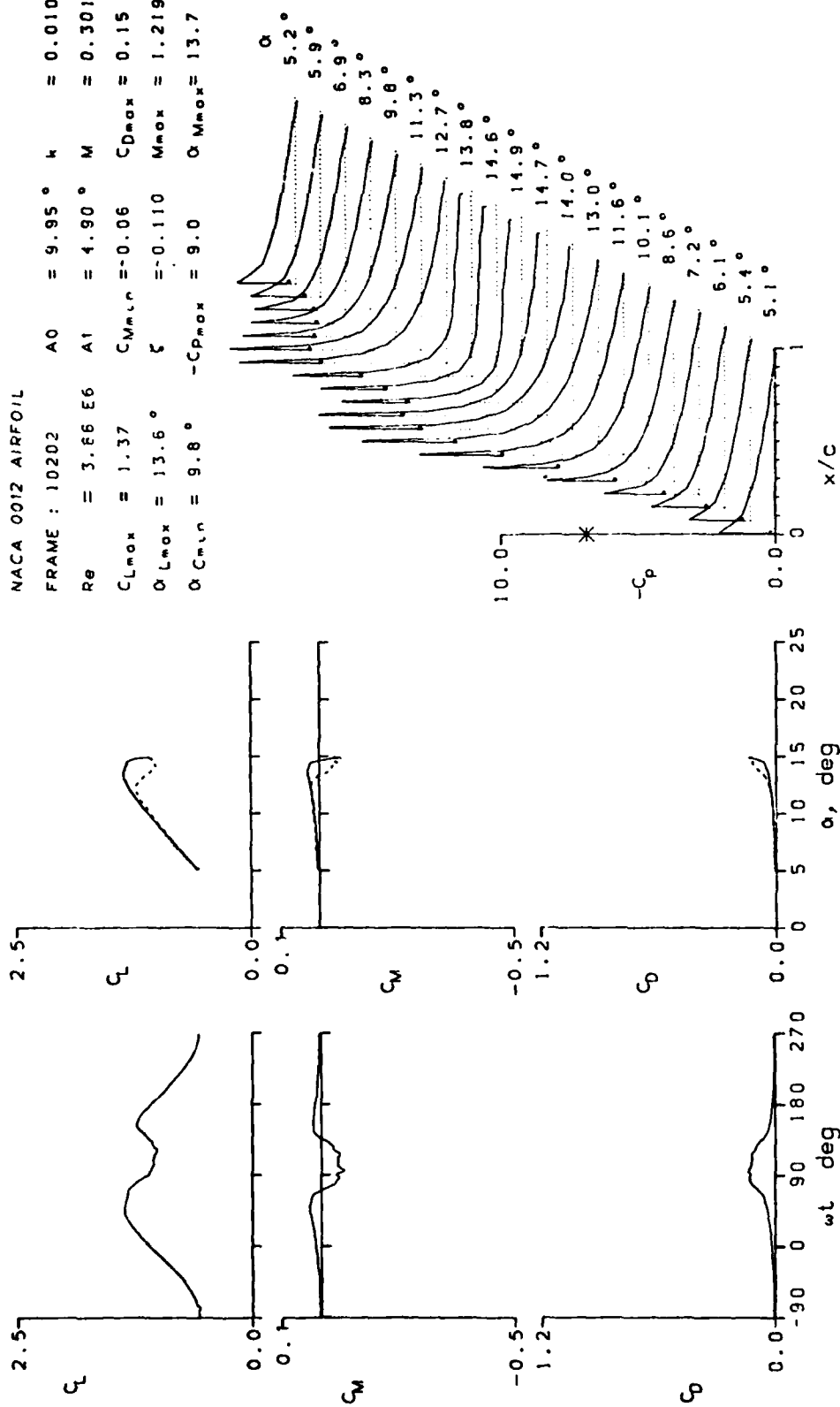


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10203	A0 = 9.95°	k = 0.025
Re = 3.85 E6	A1 = 4.90°	M = 0.301
CLmax = 1.38	CMmin = -0.04	CDmax = 0.13
αLmax = 13.5°	ξ = -0.050	Mmax = 1.227
αCMmin = 9.8°	-CDmax = 9.1	αMmax = 14.1°

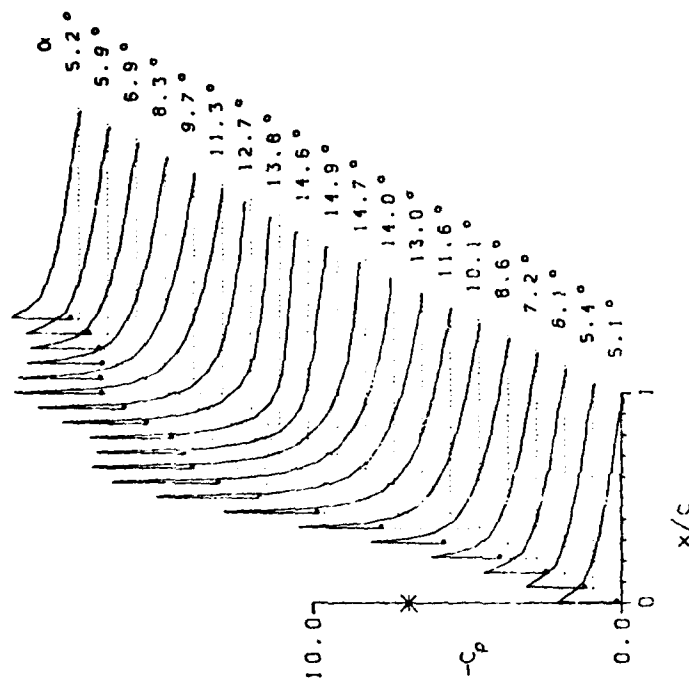
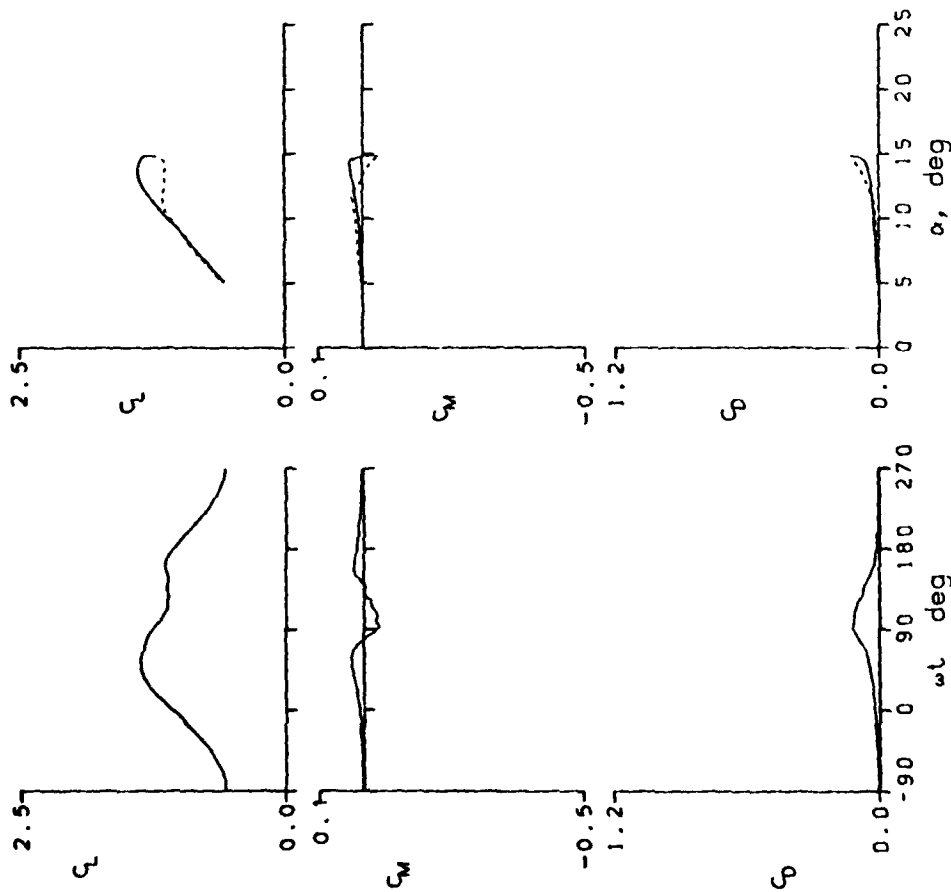


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10204 $A_0 = 9.95^\circ$ $k = 0.049$
 $R_0 = 3.83 \text{ E6}$ $A_1 = 4.90^\circ$ $M = 0.300$
 $C_{L_{max}} = 1.18$ $C_{M_{min}} = -0.10$ $C_{D_{max}} = 0.20$
 $\alpha_{L_{max}} = 14.6^\circ$ $\zeta = -0.226$ $M_{max} = 1.248$
 $\alpha_{C_{min}} = 9.8^\circ$ $-C_{p_{max}} = 9.3$ $\alpha_{M_{max}} = 13.9^\circ$

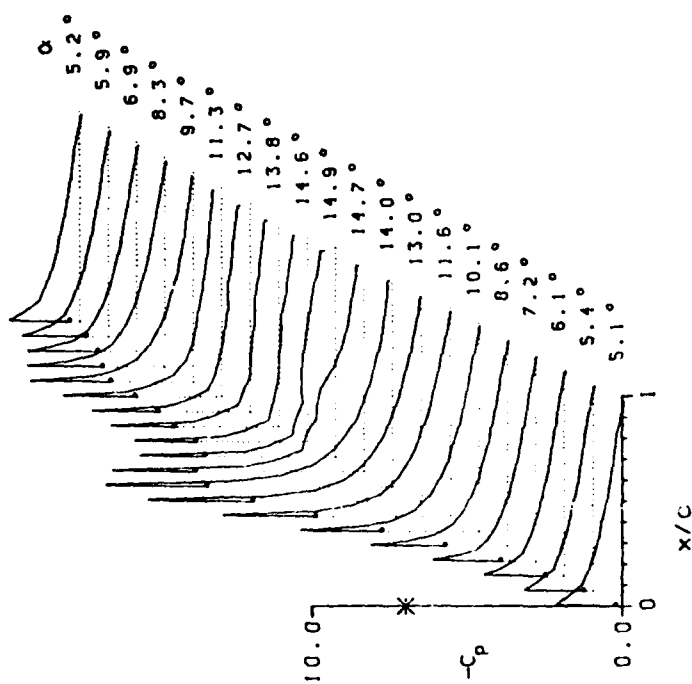
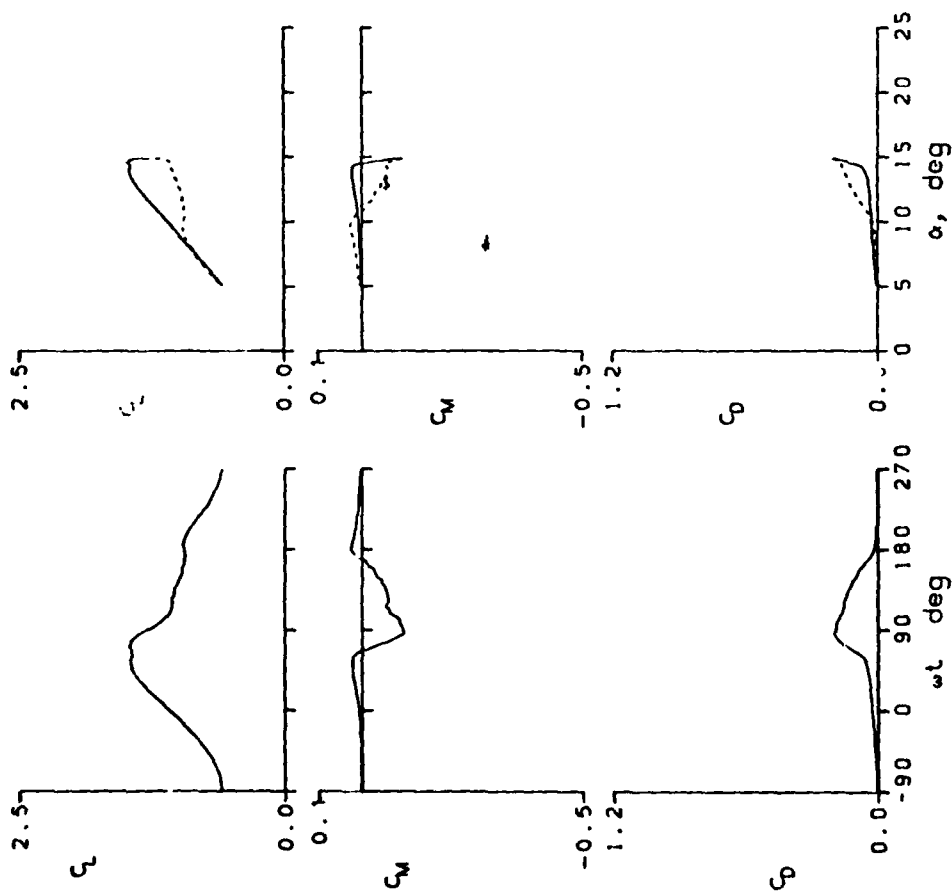


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10207 $A_0 = 9.96^\circ$ $k = 0.074$
 $Re = 3.88 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.51$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.21$
 $\alpha_{Lmax} = 14.9^\circ$ $\xi = -0.086$ $M_{max} = 1.251$
 $\alpha_{Cmin} = 9.9^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.0^\circ$

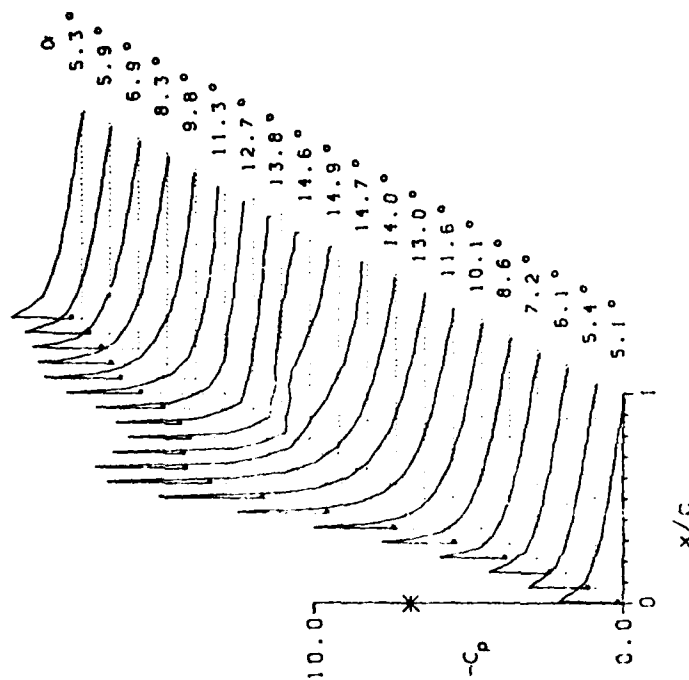
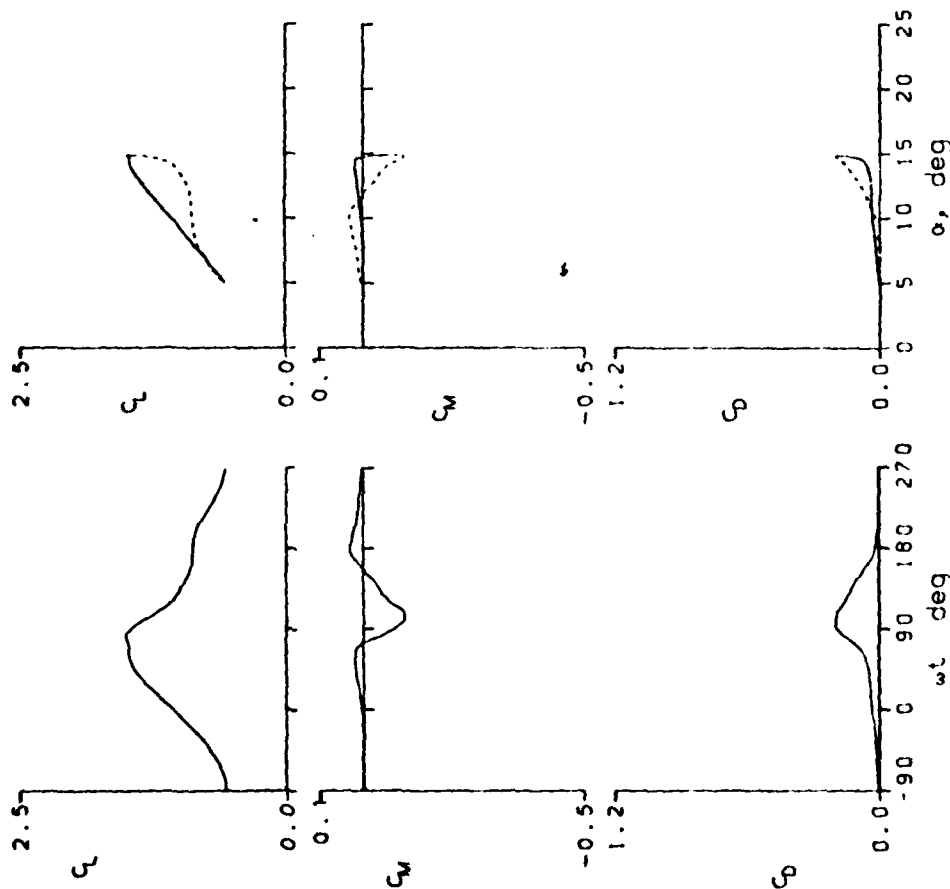


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10208 $A_0 = 9.96^\circ$ $k = 0.099$
 $Re = 3.86 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.300$
 $C_{Lmax} = 1.53$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.20$
 $\alpha_{Lmax} = 14.5^\circ$ $\zeta = -0.080$ $M_{max} = 1.250$
 $\alpha_{Cmin} = 9.7^\circ$ $-C_{pmax} = 9.4$ $\alpha_{Mmax} = 14.0^\circ$

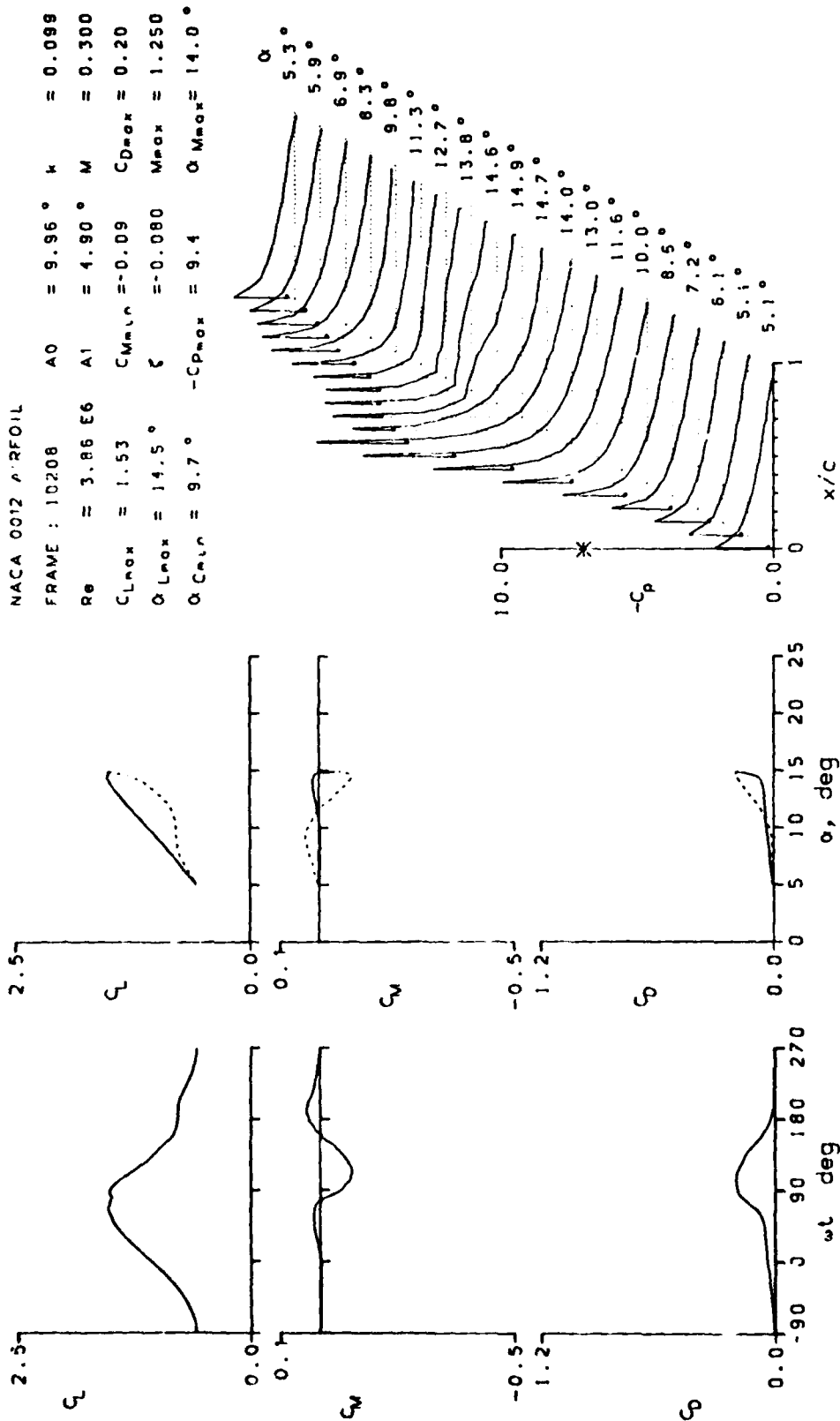


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10211 $A_0 = 9.97^\circ$ $\mu = 0.149$
 $R_0 = 3.96 \text{ E6}$ $A_1 = 4.90^\circ$ $M = 0.300$
 $C_{Lmax} = 1.57$ $C_{Mmax} = -0.07$ $C_{Dmax} = 0.22$
 $\alpha_{Lmax} = 14.7^\circ$ $\zeta = -0.088$ $M_{max} = 1.259$
 $\alpha_{C_{Lmax}} = 9.8^\circ$ $-C_{Dmax} = 9.4$ $\alpha_{Mmax} = 14.2^\circ$

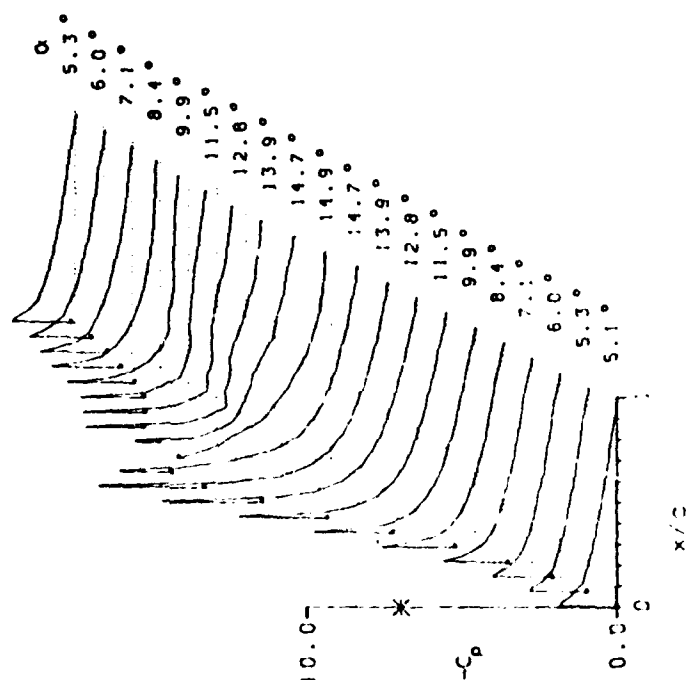
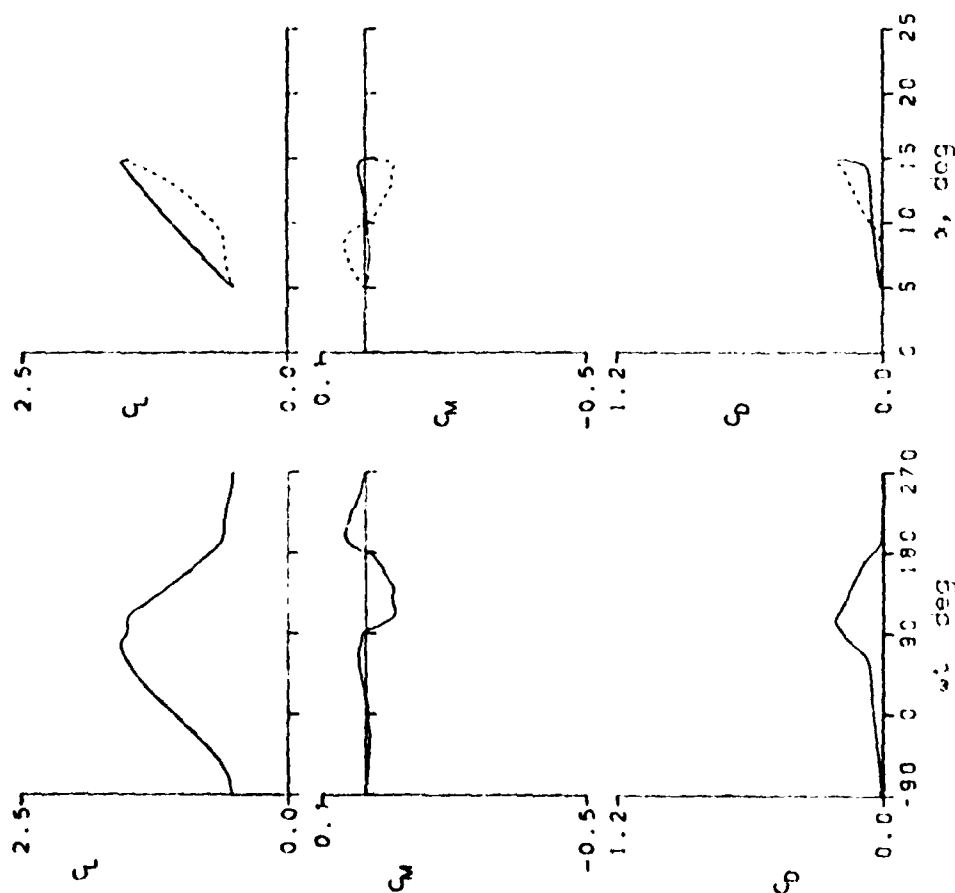


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10212 $A_0 = 9.92^\circ$ $h = 0.198$
 $Re = 3.85 \times 10^6$ $A_1 = 4.91^\circ$ $M = 0.300$
 $C_{Lmax} = 1.64$ $C_{Mmin} = -0.14$ $C_{Dmax} = 0.30$
 $\alpha_{Lmax} = 14.6^\circ$ $\xi = -0.025$ $M_{max} = 1.257$
 $\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 9.4$ $\alpha_{Mmax} = 14.0^\circ$

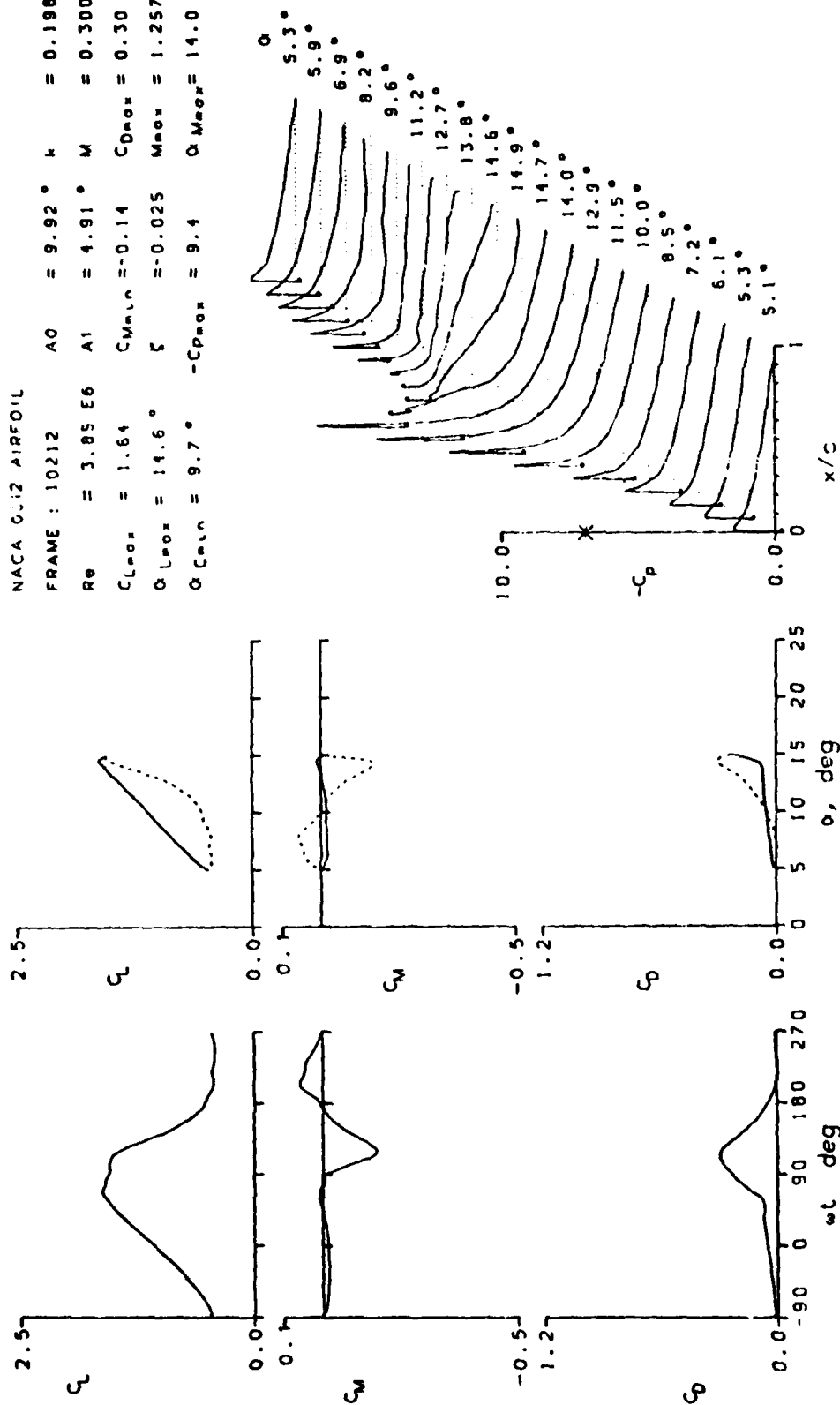


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10218	$\alpha_0 = 4.95^\circ$	$\mu = 0.010$
$R_F = 7.93 \text{ E6}$	$\lambda' = 5.00^\circ$	$M = 0.300$
$C_{L_{max}} = 1.13$	$C_{M_{min}} = -0.02$	$C_{D_{max}} = 0.03$
$\alpha_{L_{max}} = 10.0^\circ$	$\xi = 0.029$	$M_{max} = 0.898$
$\phi_{C_{min}} = 4.8^\circ$	$-C_{D_{max}} = 5.8$	$\phi_{M_{max}} = 10.0^\circ$

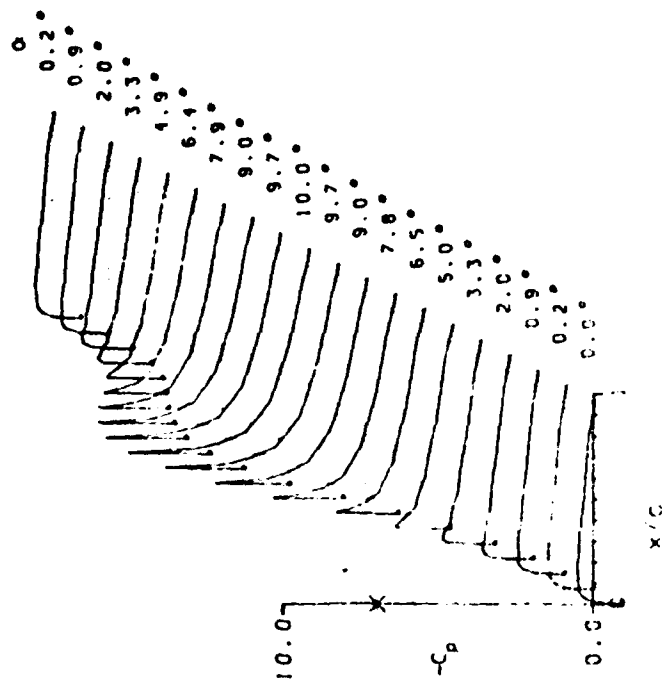
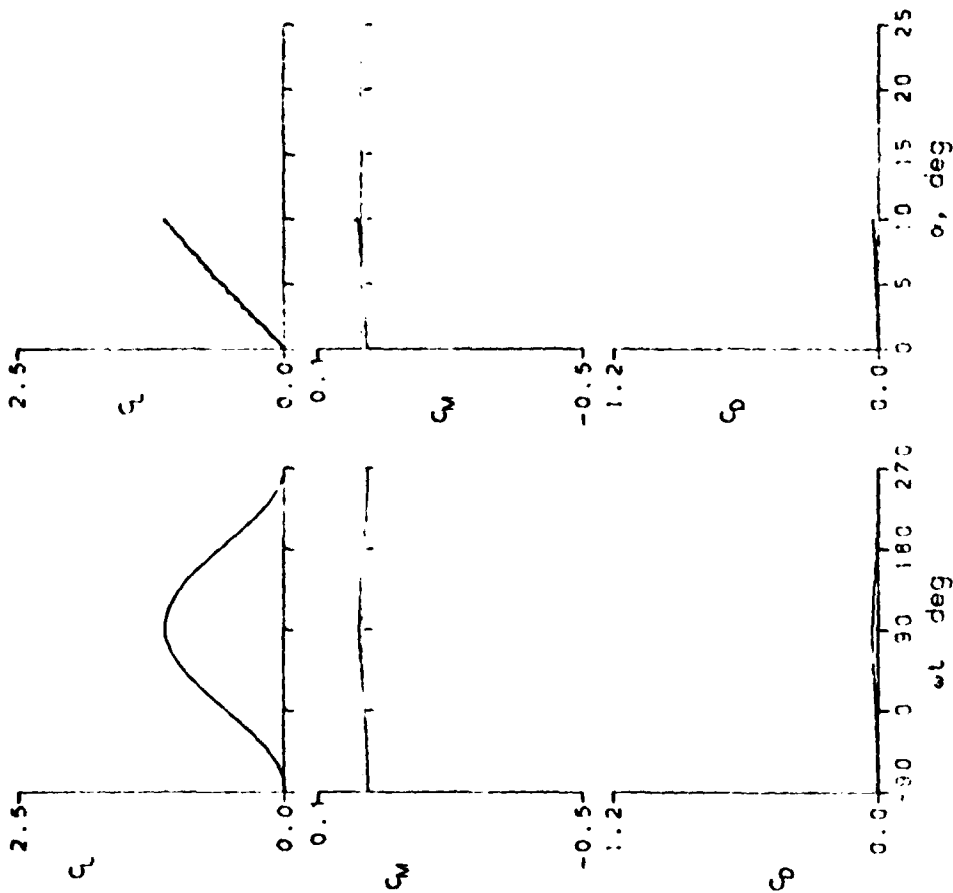


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10221 $AC = 4.94^\circ$ $h = 0.089$
 $Re = 3.93 \times 10^6$ $A' = 5.00^\circ$ $M = 0.301$
 $C_{L,00} = 1.12$ $C_{M,00} = -0.02$ $C_{D,00} = 0.04$
 $\alpha_{L,00} = 10.0^\circ$ $\xi = 0.286$ $M_{acc} = 0.897$
 $\alpha_{C_{L,00}} = 4.8^\circ$ $-C_{D,00} = 5.8$ $\alpha_{M_{acc}} = 9.9^\circ$

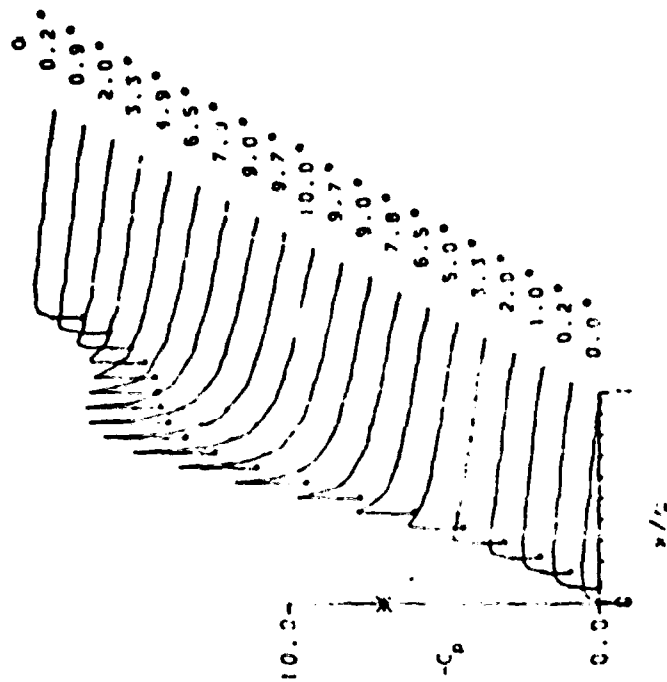
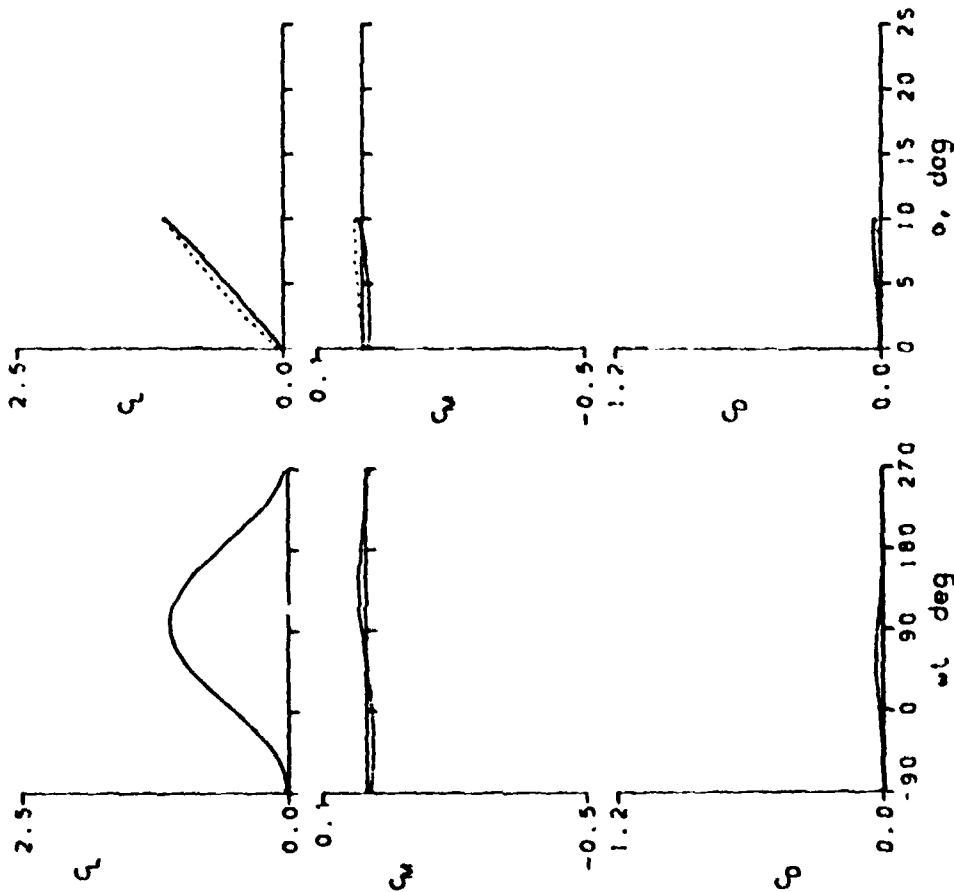


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAYE : 12222 $\alpha_0 = 4.93^\circ$ $\alpha = 0.100$
 $Re = 3.91 \times 10^6$ $\Delta t = 4.99^\circ$ $M = 0.301$
 $C_{L_{max}} = 1.13$ $C_{D_{max}} = 0.04$ $C_{D_{max}} = 0.05$
 $\alpha_{L_{max}} = 10.0^\circ$ $C_L = 0.656$ $M_{max} = 0.922$
 $\alpha_{C_{L_{max}}} = 4.7^\circ$ $-C_{D_{max}} = 6.1$ $\alpha_{M_{max}} = 9.9^\circ$

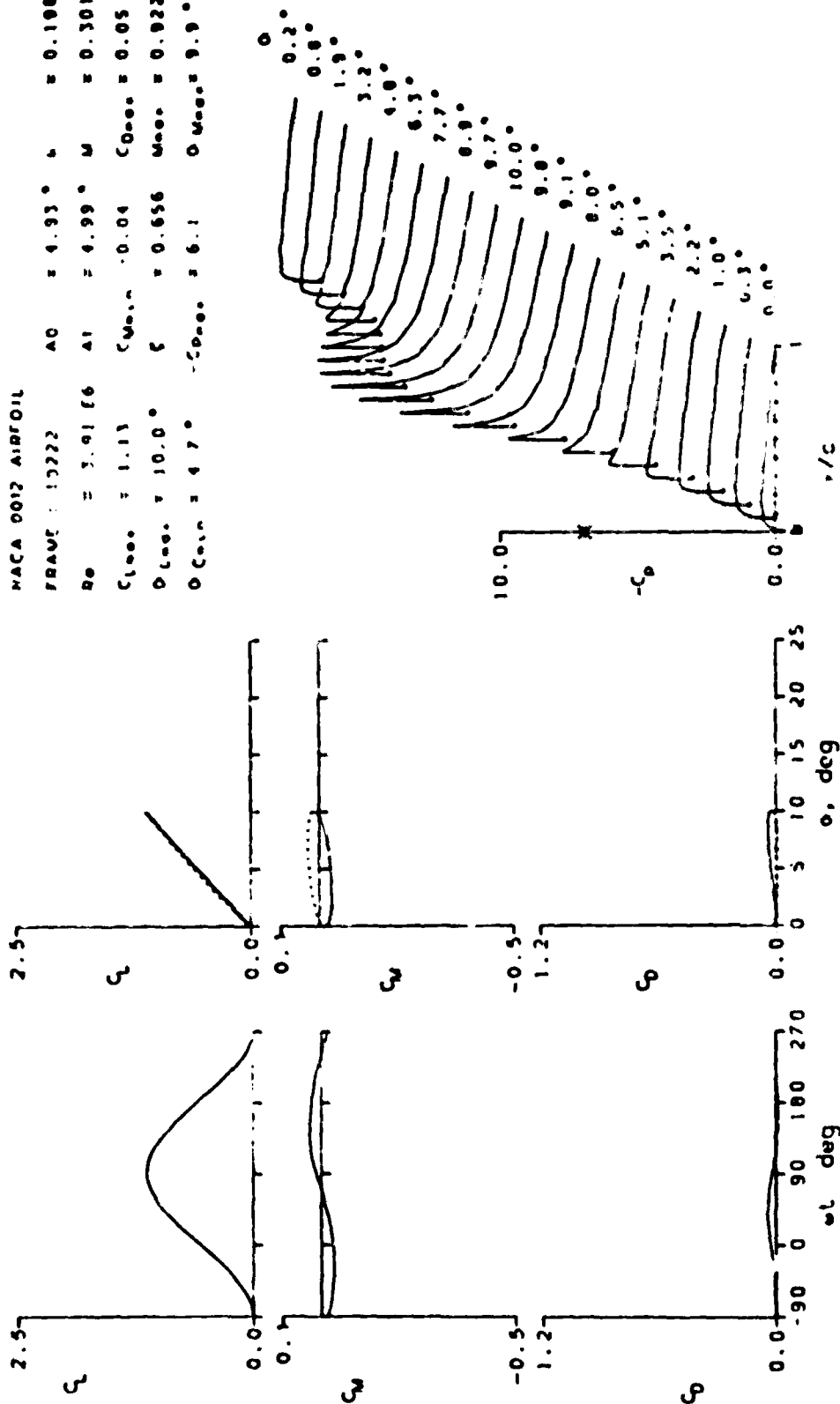


Figure 12.- Continued.

NACA 001 AIRCRAFT
 FRAME 1000000
 $W_0 = 3.916$ $A_1 = 10.05$ $M = 0.098$
 $C_{L,000} = 1.12$ $C_{M,000} = 0.08$ $C_{D,000} = 0.20$
 $D_{L,000} = 14.9$ $C = 0.169$ $M_{000} = 1.238$
 $D_{C,000} = 4.3$ $-C_{D,000} = 9.2$ $D_{M,000} = 14.5$

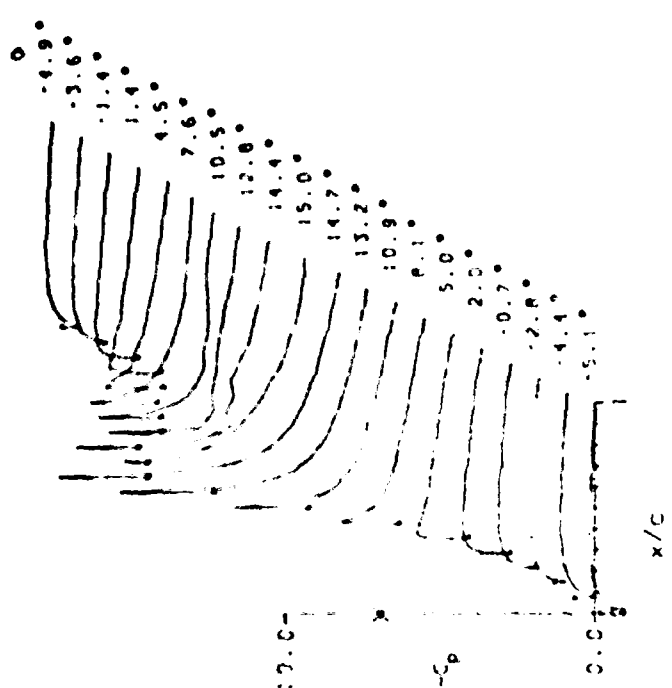
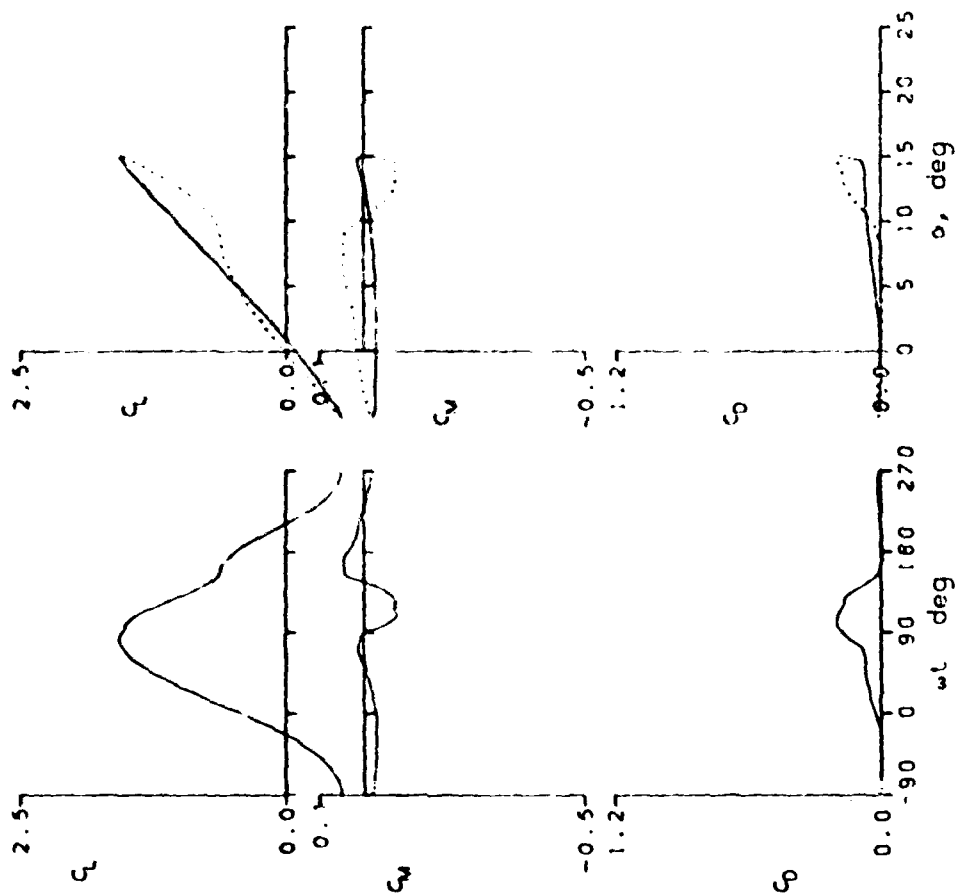


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 10305	A0 = 3.64°	k = 0.099
Re = 3.91 E6	A1 = 10.11°	M = 0.301
C _{Lmax} = 1.49	C _{Mmin} = -0.04	C _{Dmax} = 0.07
α _{Lmax} = 12.9°	ξ = 0.255	M _{max} = 1.241
α _{Cmin} = 0.0°	-C _{pmax} = 3.2	α _{Mmax} = 13.9°

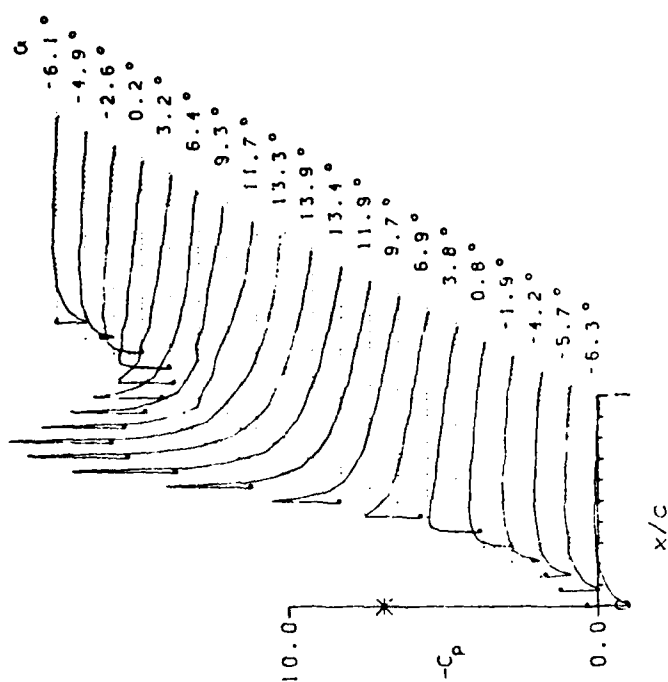
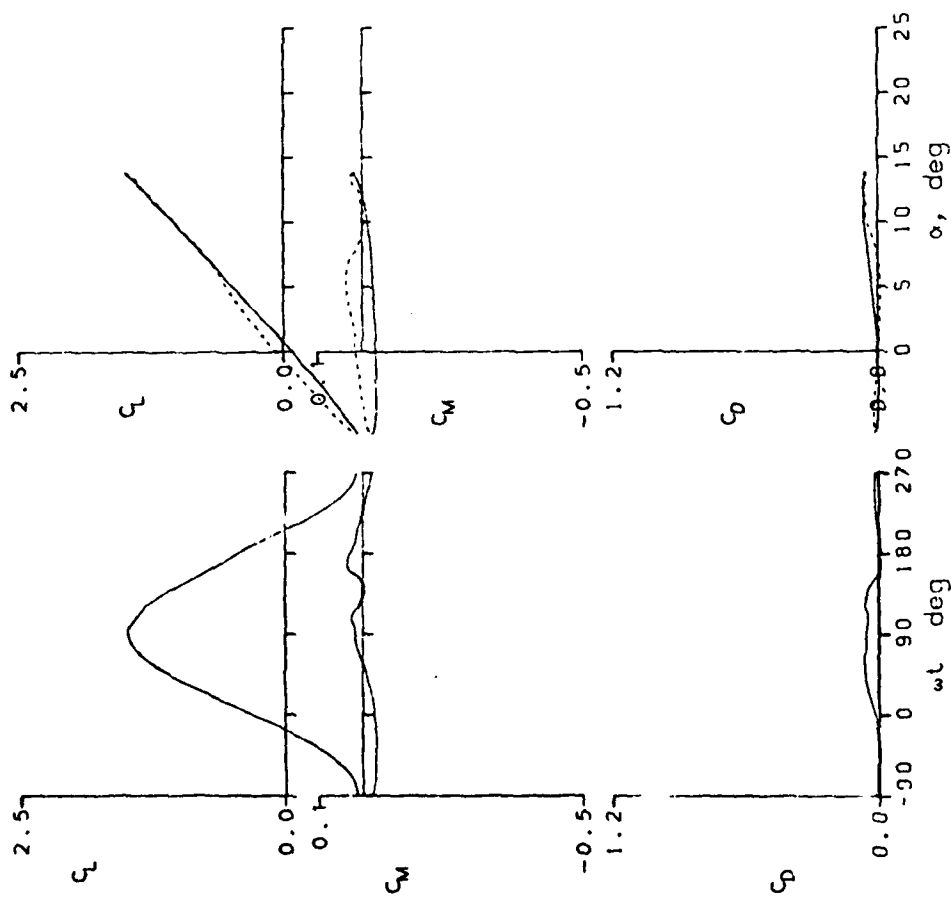


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 10309 $A_0 = 2.64^\circ$ $k = 0.099$
 $Re = 3.90 \times 10^6$ $A_1 = 10.16^\circ$ $M = 0.301$
 $C_{Lmax} = 1.42$ $C_{Mmin} = -0.04$ $C_{Dmax} = 0.06$
 $\alpha_{Lmax} = 12.9^\circ$ $\xi = 0.309$ $M_{max} = 1.208$
 $\alpha_{Cmin} = -0.2^\circ$ $-C_{Dmax} = 9.9$ $\alpha_{Mmax} = 12.8^\circ$

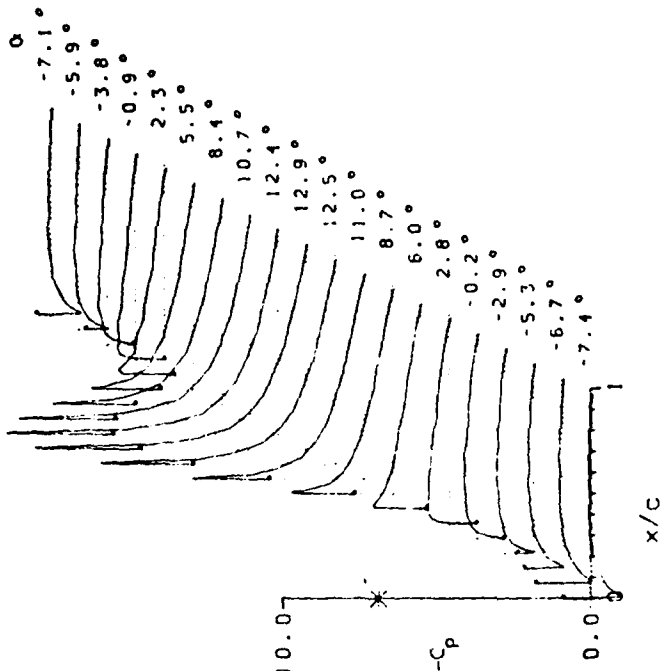
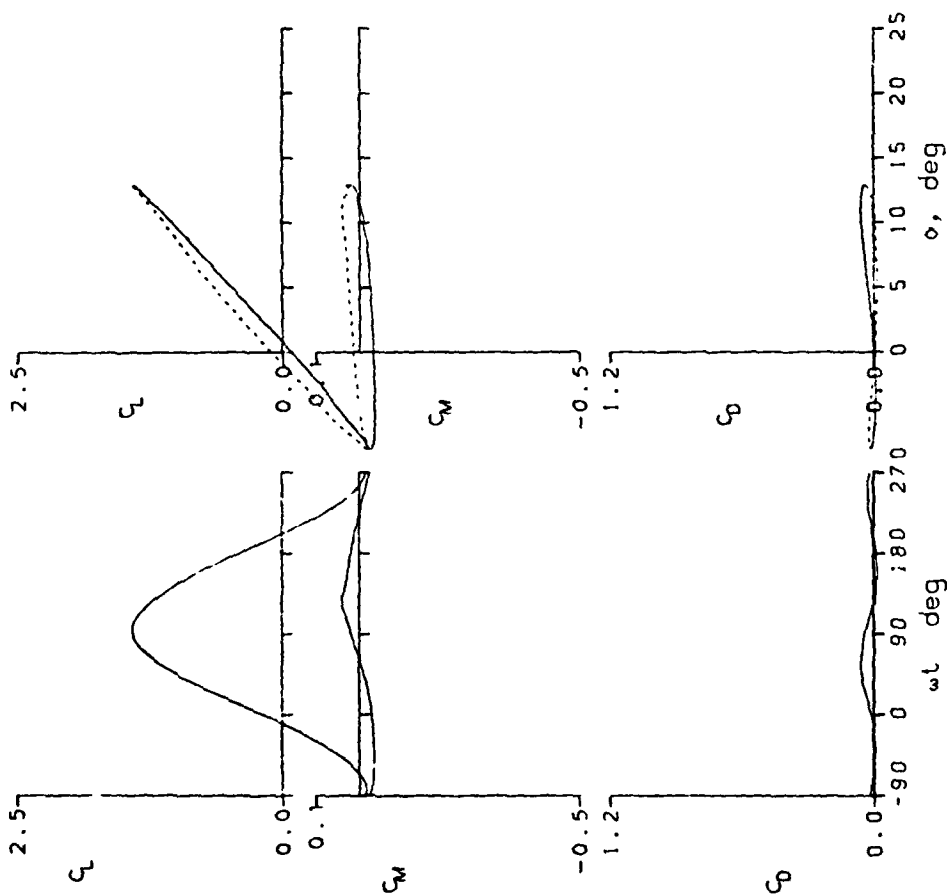


Figure 12.- Continued.

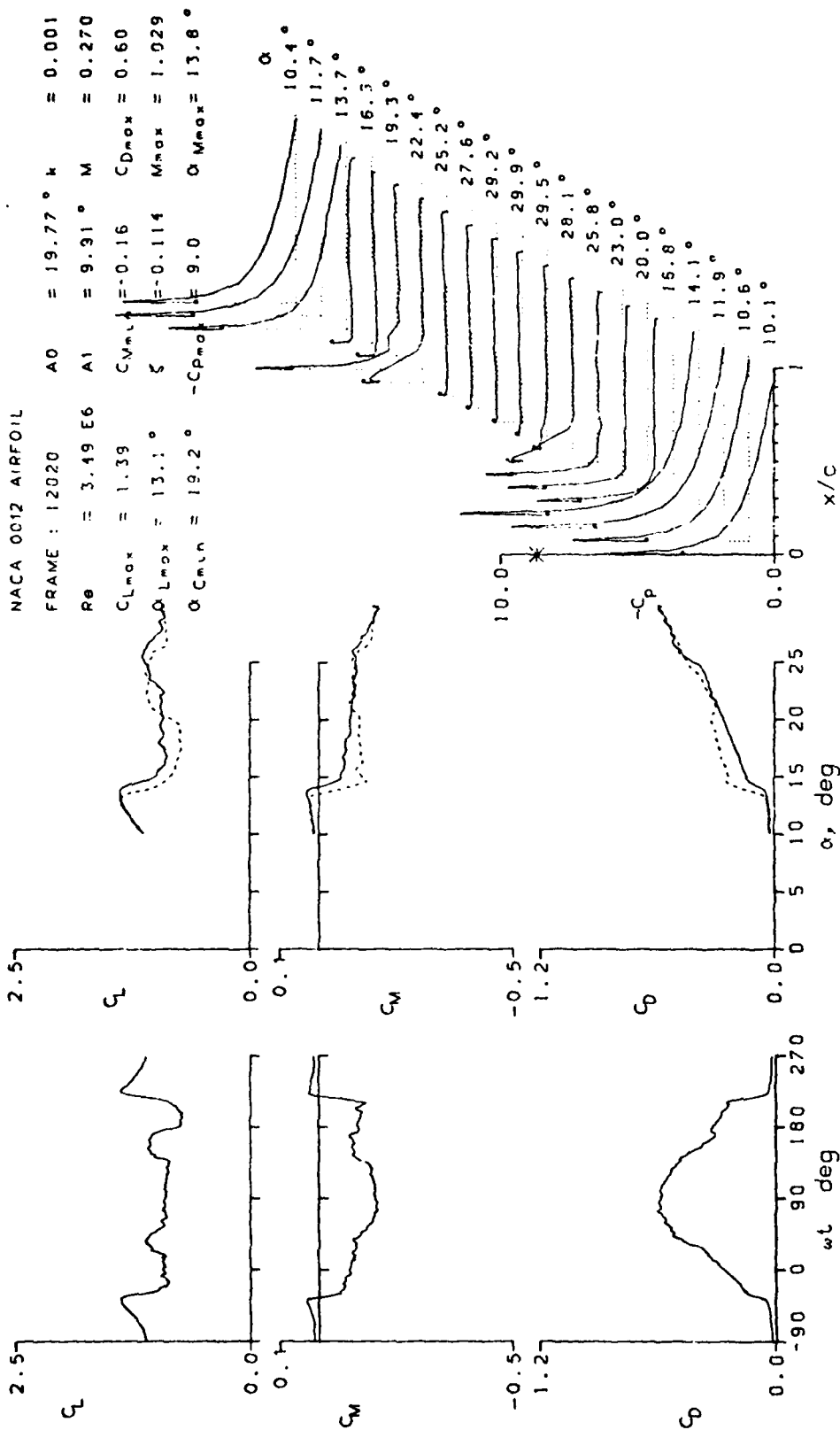


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 12102 $A_0 = 4.86^\circ$ $k = 0.001$
 $Re = 3.82 \text{ E} 6$ $A_1 = 10.06^\circ$ $M = 0.302$
 $C_{Lmax} = 1.38$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.16$
 $\alpha_{Lmax} = 13.4^\circ$ $\xi = 0.002$ $M_{max} = 1.206$
 $\alpha_{Cmin} = 4.3^\circ$ $-C_{pmax} = 8.8$ $\alpha_{Mmax} = 13.6^\circ$

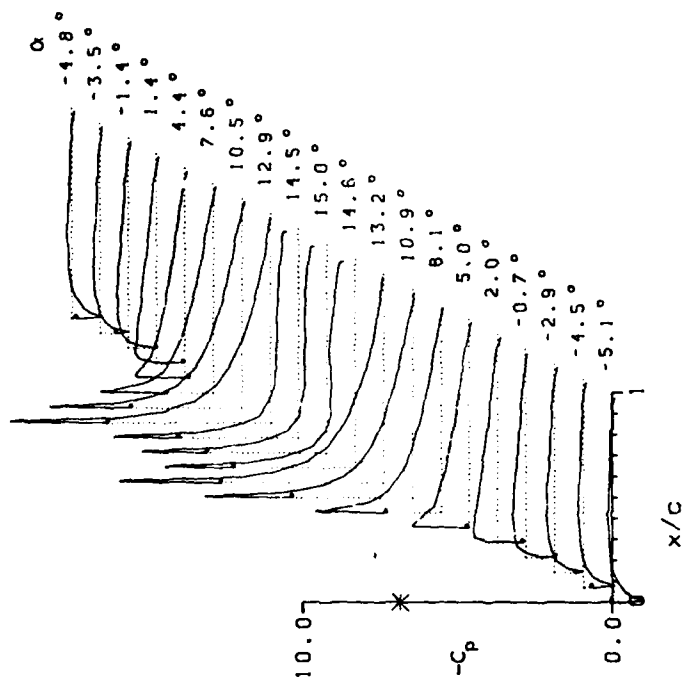
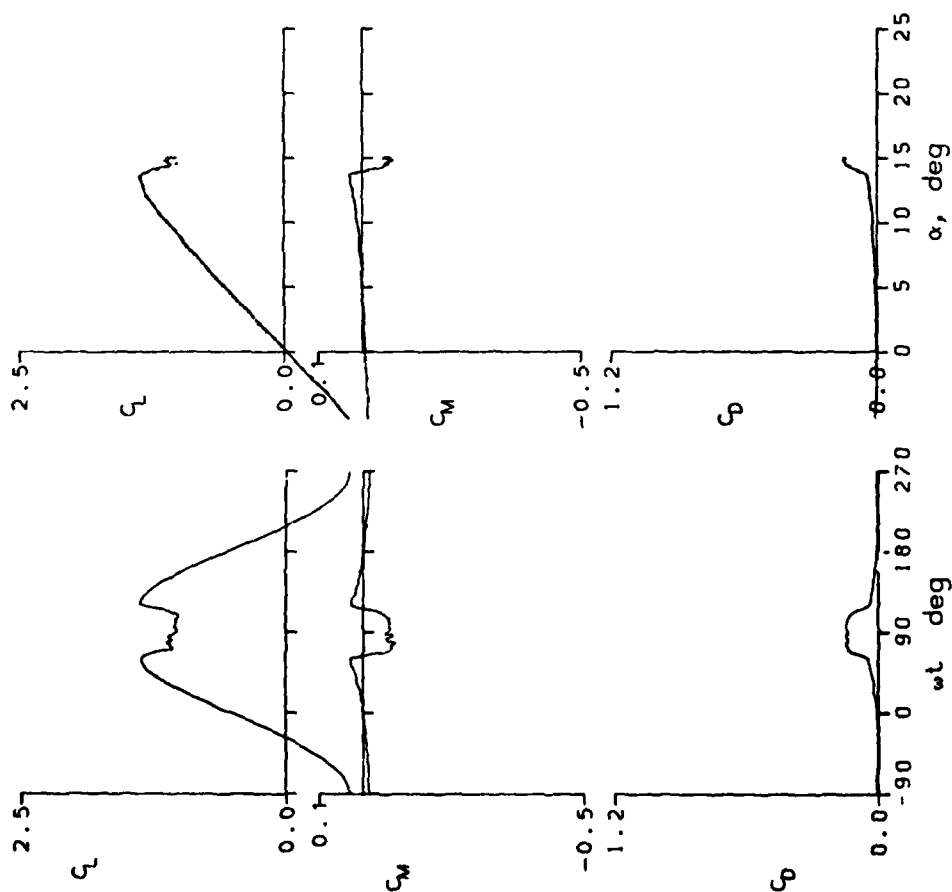


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 12109 $A_0 = 5.82^\circ$ $k = 0.001$
 $Re = 3.49 \times 10^6$ $A_1 = 10.00^\circ$ $M = 0.279$
 $C_{Lmax} = 1.43$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.18$
 $\alpha_{Lmax} = 14.3^\circ$ $\xi = -0.723$ $M_{max} = 1.114$
 $\alpha_{Cmin} = 5.3^\circ$ $-C_{pmax} = 9.5$ $\alpha_{Mmax} = 14.5^\circ$

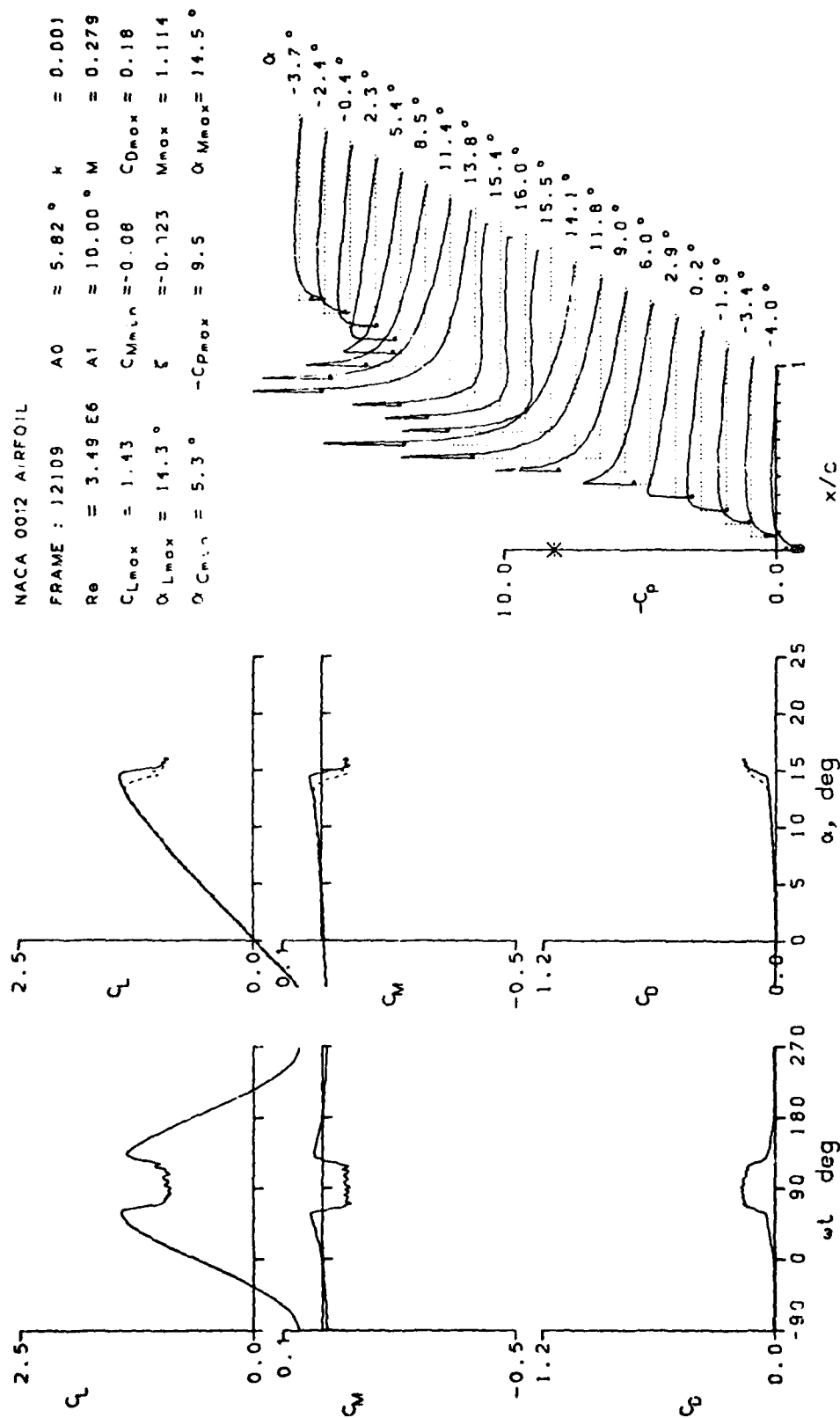


Figure 12.- Continued.

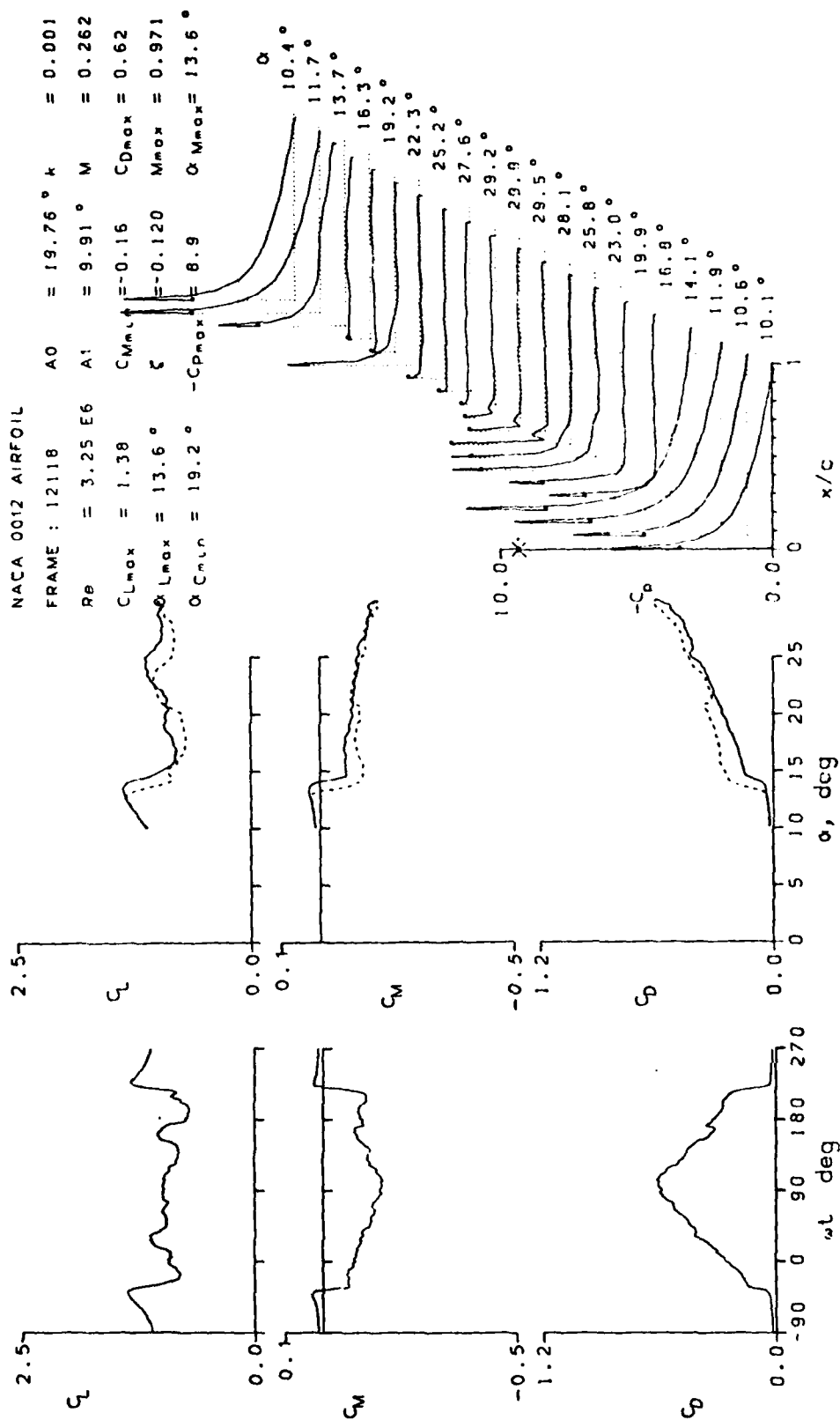


Figure 12.- Continued.

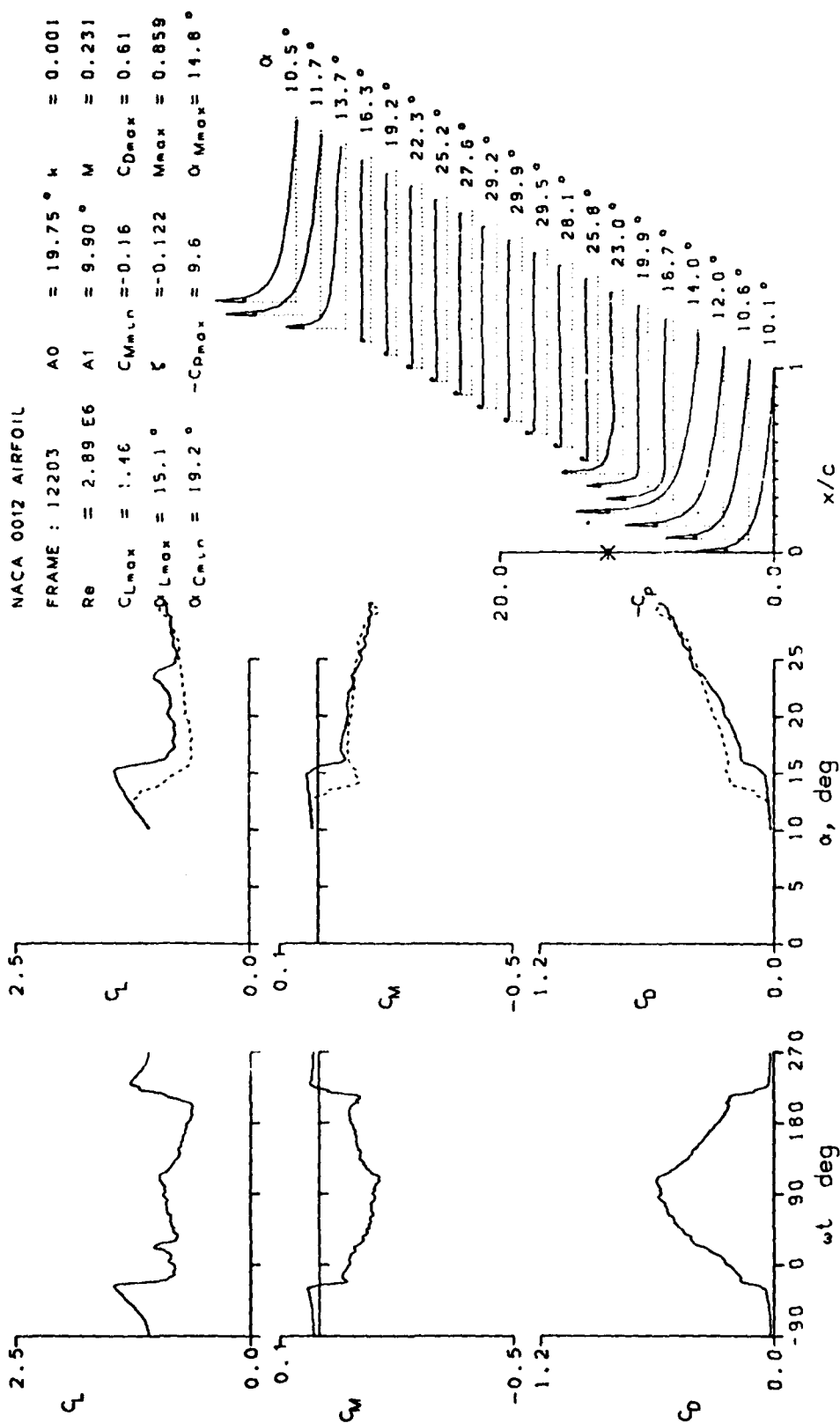


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 122C8 $A_0 = 6.80^\circ$ $h = 0.001$
 $Re = 3.27 E6$ $A' = 10.00^\circ M = 0.244$
 $C_{Lmax} = 1.57$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.19$
 $\alpha_{Lmax} = 16.0^\circ$ $\zeta = -0.069$ $M_{max} = 1.004$
 $\alpha_{Cmin} = 6.3^\circ$ $-C_{pmax} = 10.9$ $\alpha_{Mmax} = 16.1^\circ$

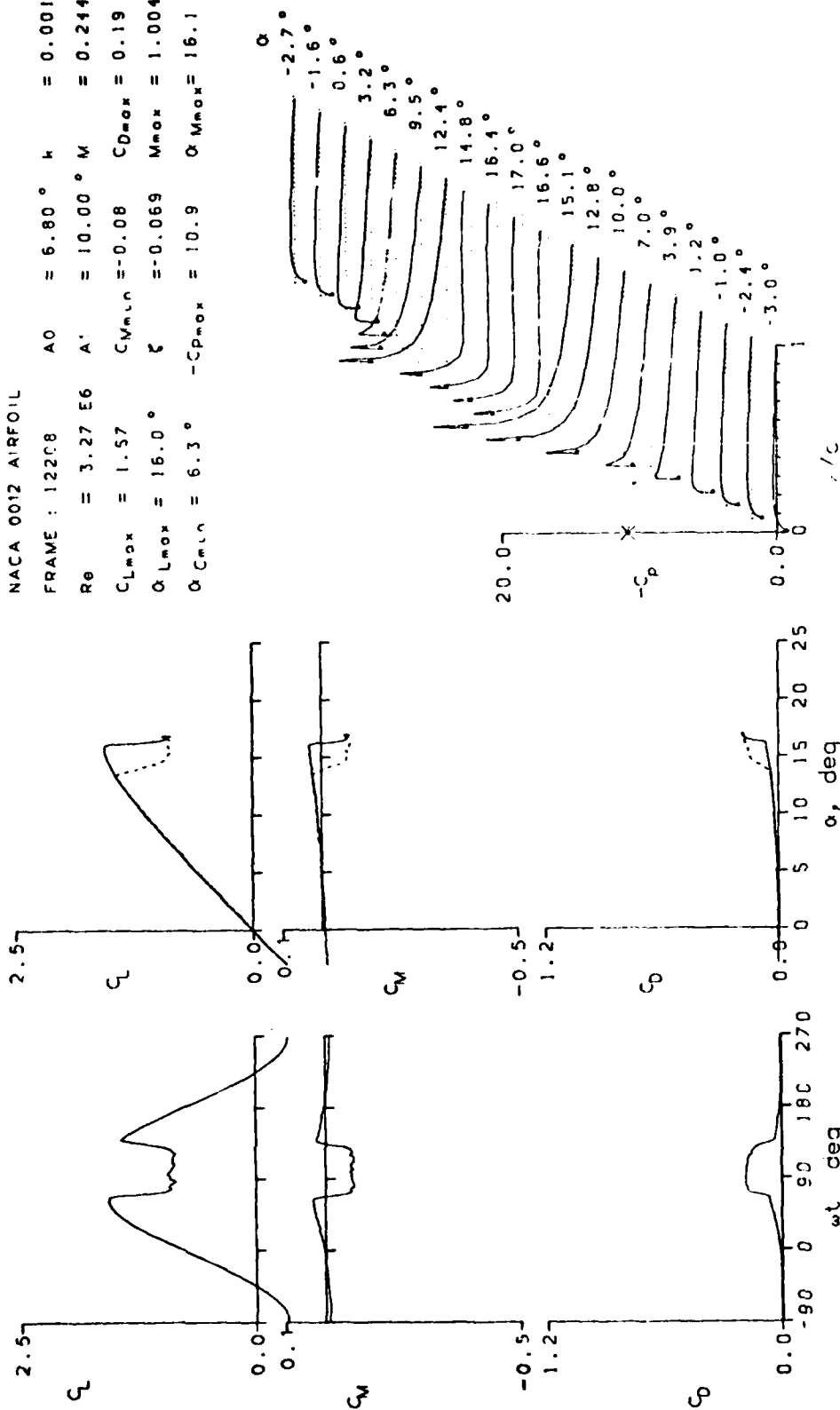


Figure 12.- Continued.

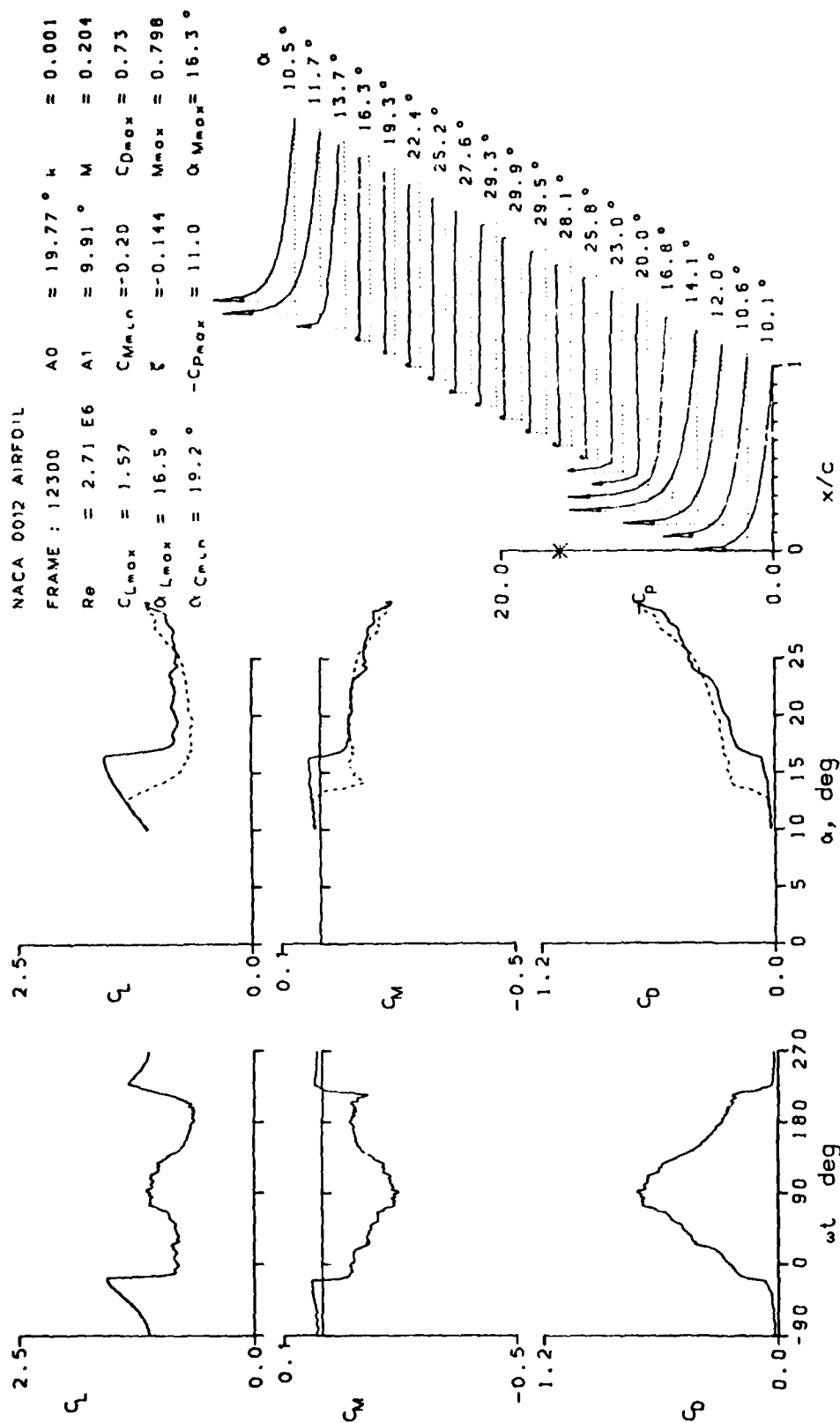


Figure 12.- Continued.

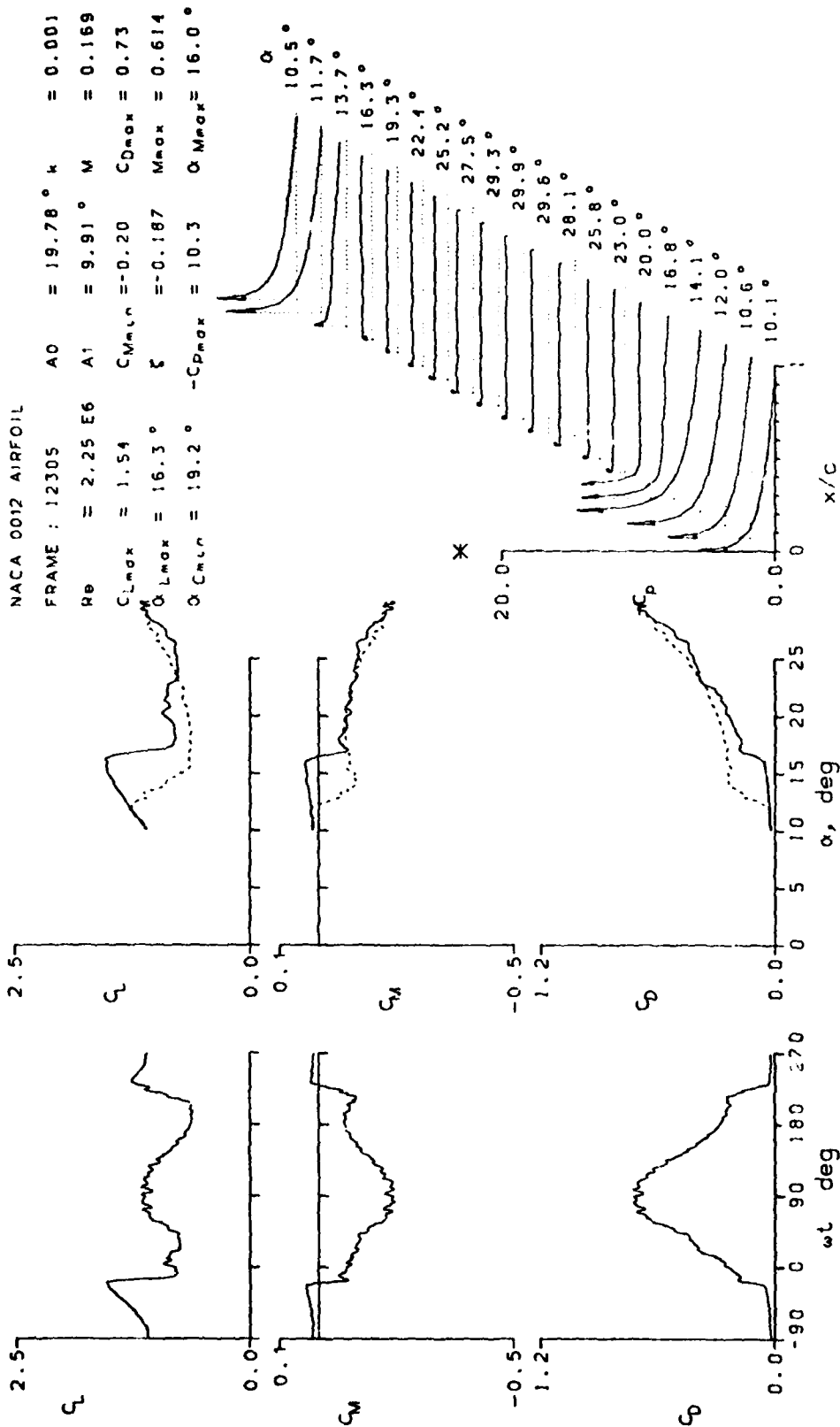


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 12310 $AC = 6.79^\circ$ $\mu = 0.001$
 $Re = 2.47 \text{ E}6$ $At = 10.00^\circ$ $M = 0.186$
 $C_{Lmax} = 1.54$ $C_{Mmin} = -0.03$ $C_{Dmax} = 0.24$
 $\alpha_{Lmax} = 15.9^\circ$ $\xi = -0.106$ $M_{max} = 0.691$
 $\alpha_{Cmin} = 5.3^\circ$ $-C_{Dmax} = 10.5$ $\alpha_{Mmax} = 16.2^\circ$

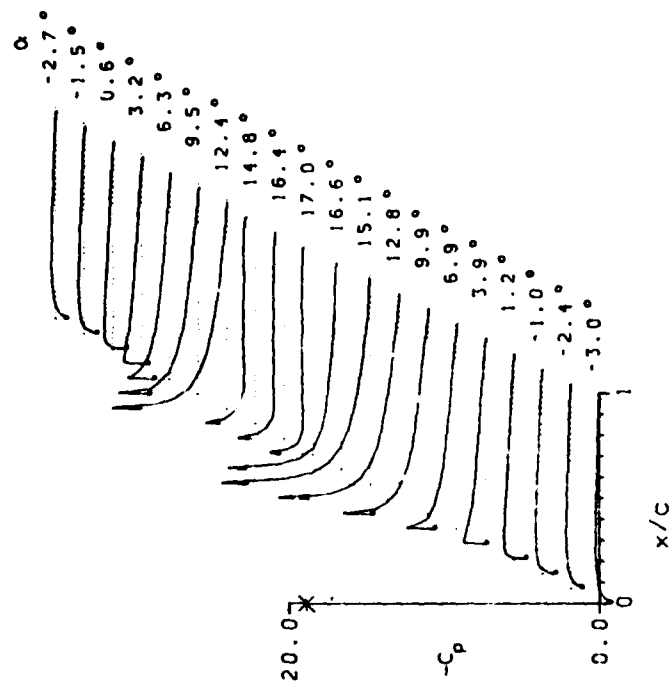
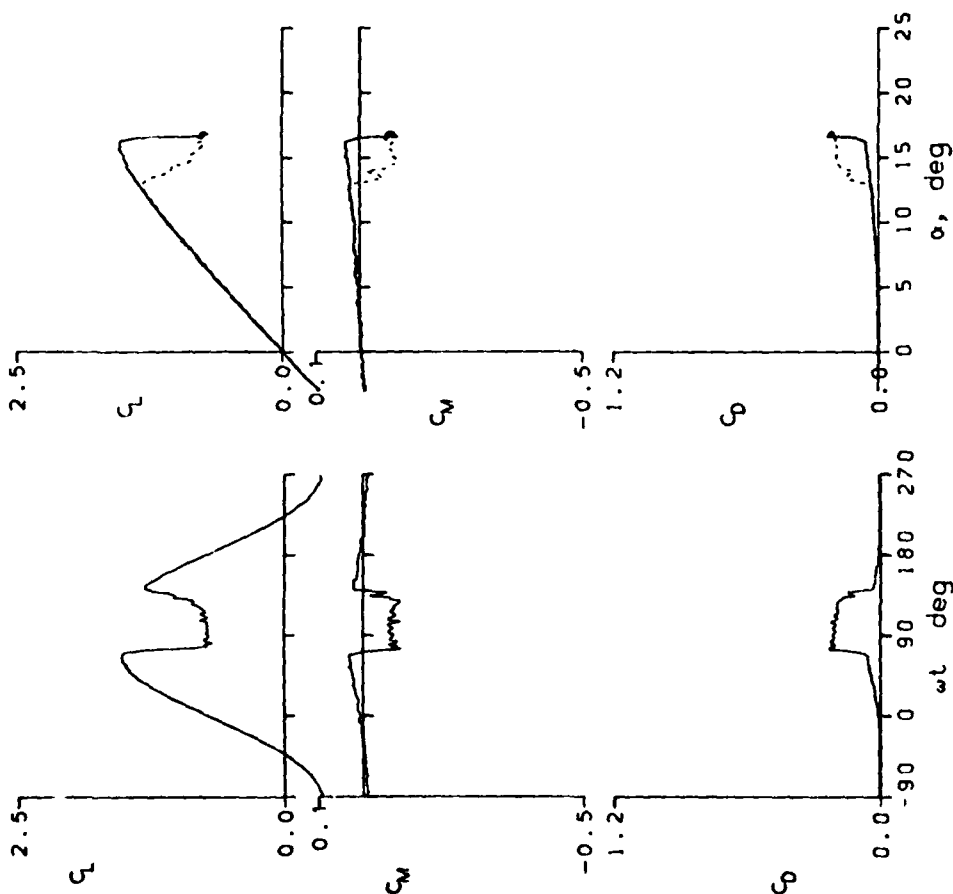


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 13021	$\alpha_0 = 6.79^\circ$	$\mu = 0.002$
$Re = 1.50 E6$	$A' = 10.00^\circ$	$W = 0.100$
$C_{Lmax} = 1.42$	$C_{VMIN} = -0.07$	$C_{Dmax} = 0.20$
$\alpha_{Lmax} = 14.9^\circ$	$\xi = -0.059$	$M_{max} = 0.348$
$\alpha_{CMIN} = 5.3^\circ$	$-C_{Dmax} = 8.9$	$\alpha_{Mmax} = 14.7^\circ$

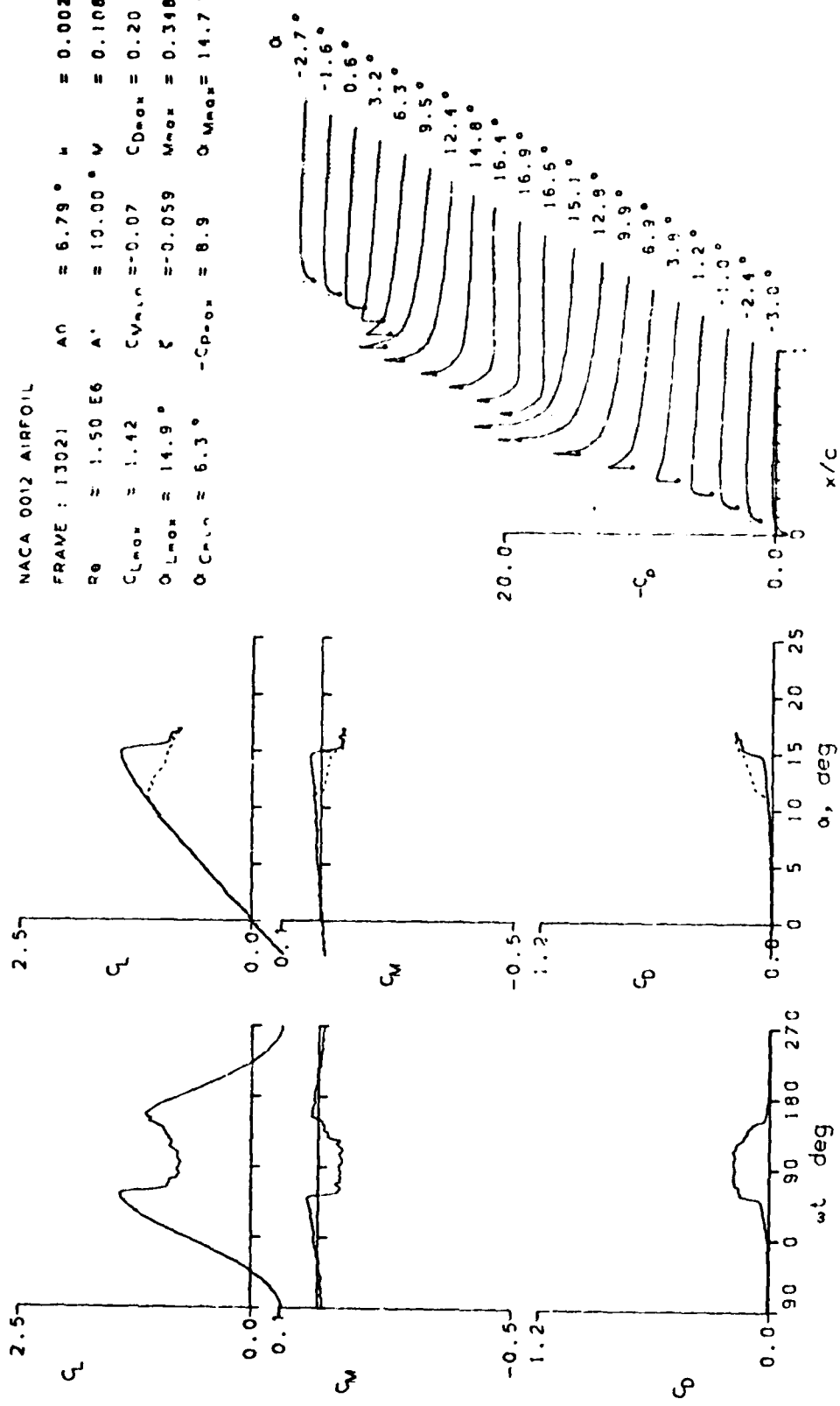
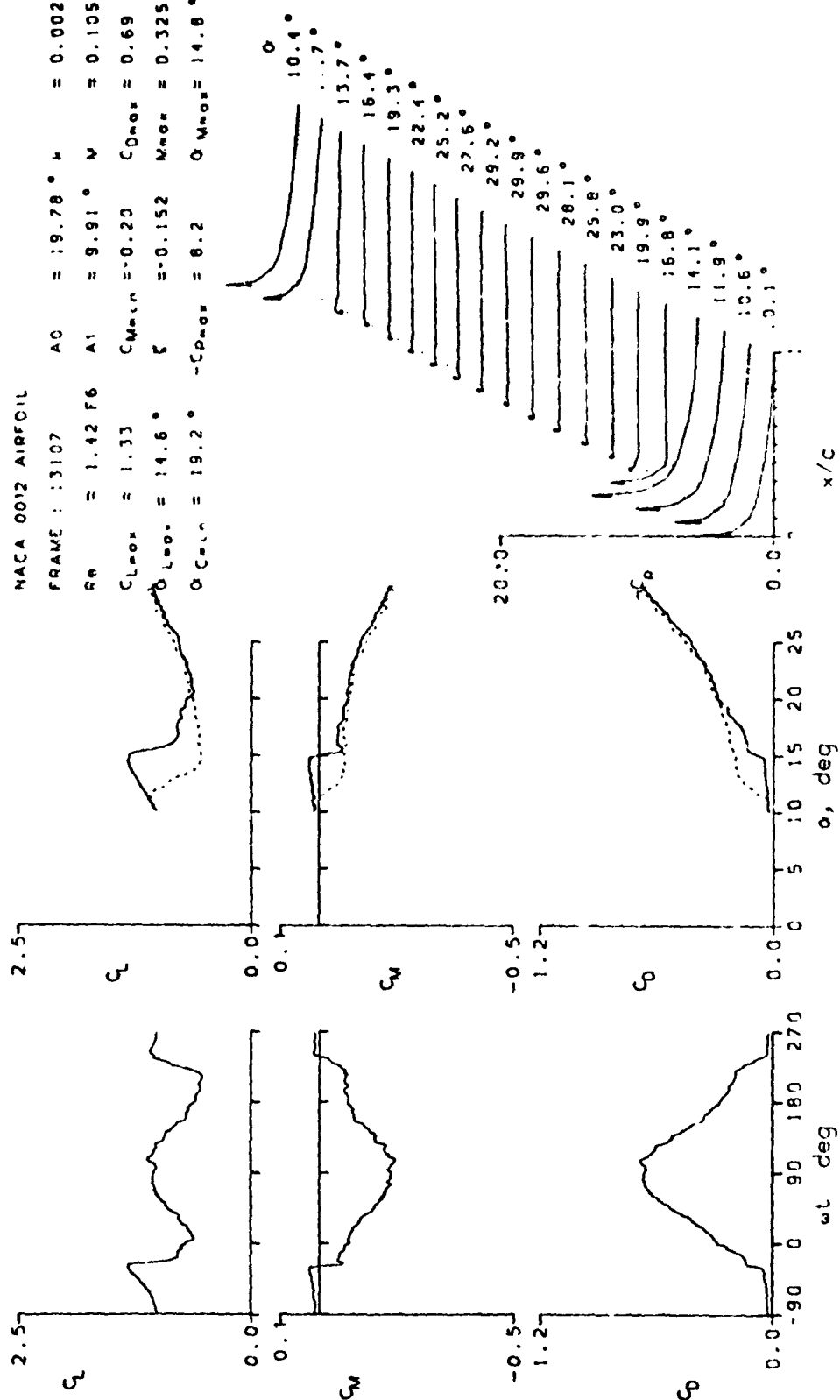
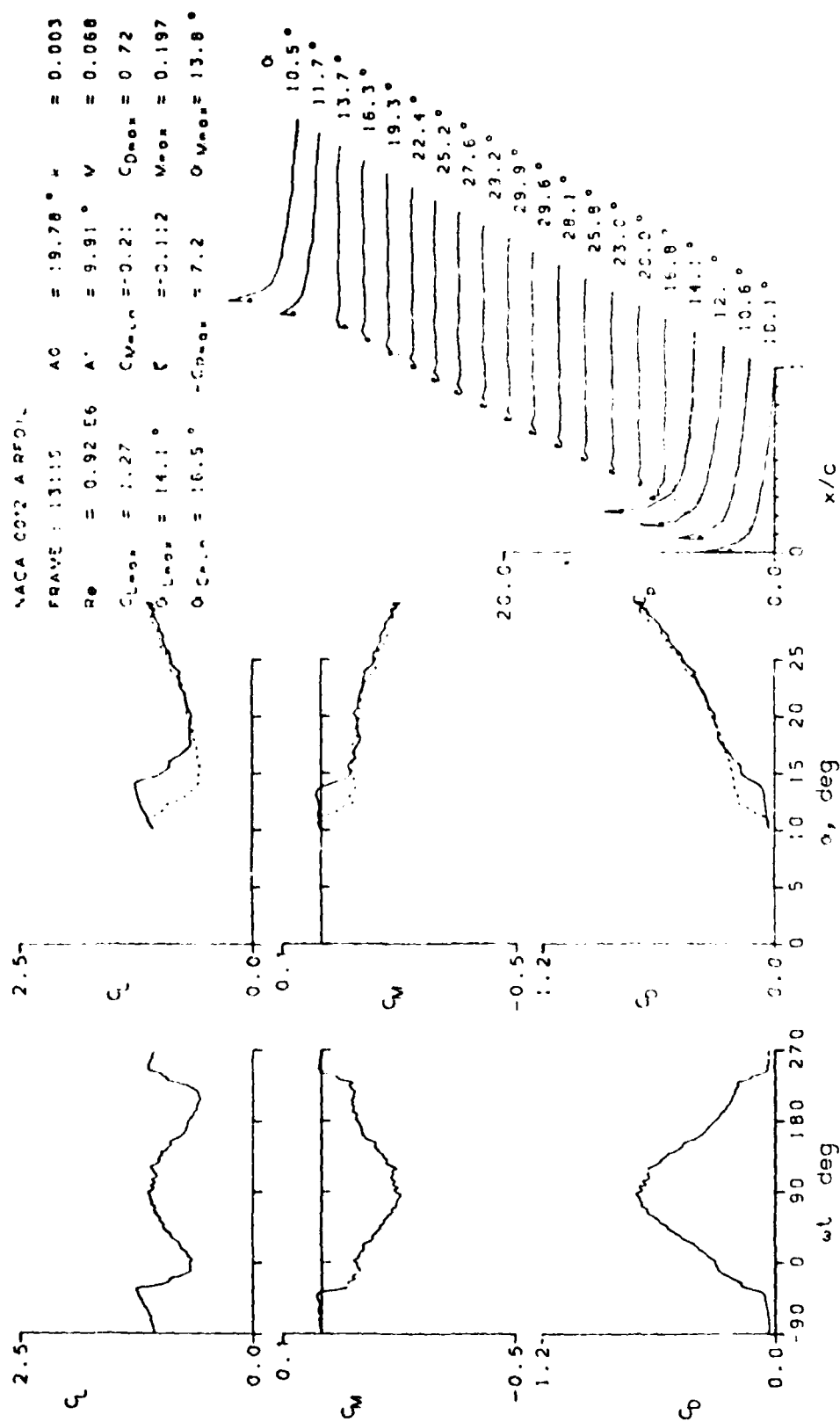


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 3107 AO = 19.78° = 0.002

$$R^0 = 1.42 \text{ F6} \quad A^1 = 9.91^\circ \quad W = 0.105$$
$$C_{L_{\text{ox}}} = 1.33 \quad C_{M_{\text{ox}}} = 0.20 \quad C_{D_{\text{ox}}} = 0.69$$
$$\delta_{L=0} = 14.6^\circ \quad \zeta = -0.152 \quad M_{\text{tot}} = 0.325$$
$$\alpha_{C_{2}H_5} = 19.2^\circ \quad -C_{2H_5} = 8.2 \quad \alpha_{MeOH} = 14.6^\circ$$




AD-A121 598

AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED
AIRFOIL SECTIONS VOLUM..(U) NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION MOFFETT FIELD C..

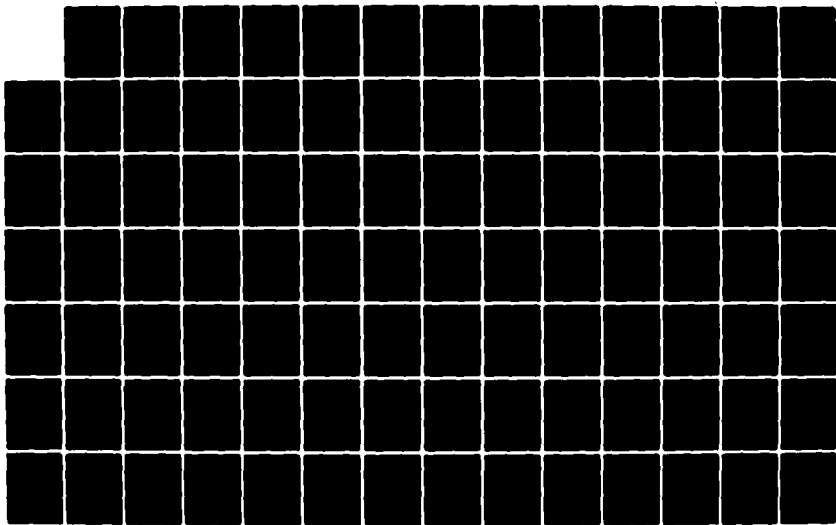
3/1

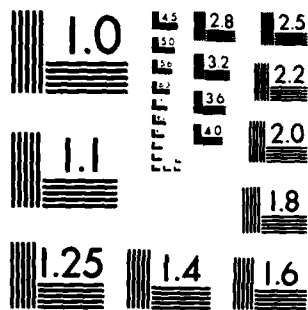
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MICROCOPY RESOLUTION TEST CHART
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NACA 0012 A RFO

FRAME : 13120	AC = 4.84°	h = 0.003
Re = 0.98 E6	A' = 10.06°	V = 0.072
CLmax = 1.25	CMmin = -0.06	CDmax = 0.15
αLmax = 13.4°	ξ = -0.016	Vmax = 0.206
αCMmin = 4.3°	-CPmax = 7.1	αMmax = 13.7°

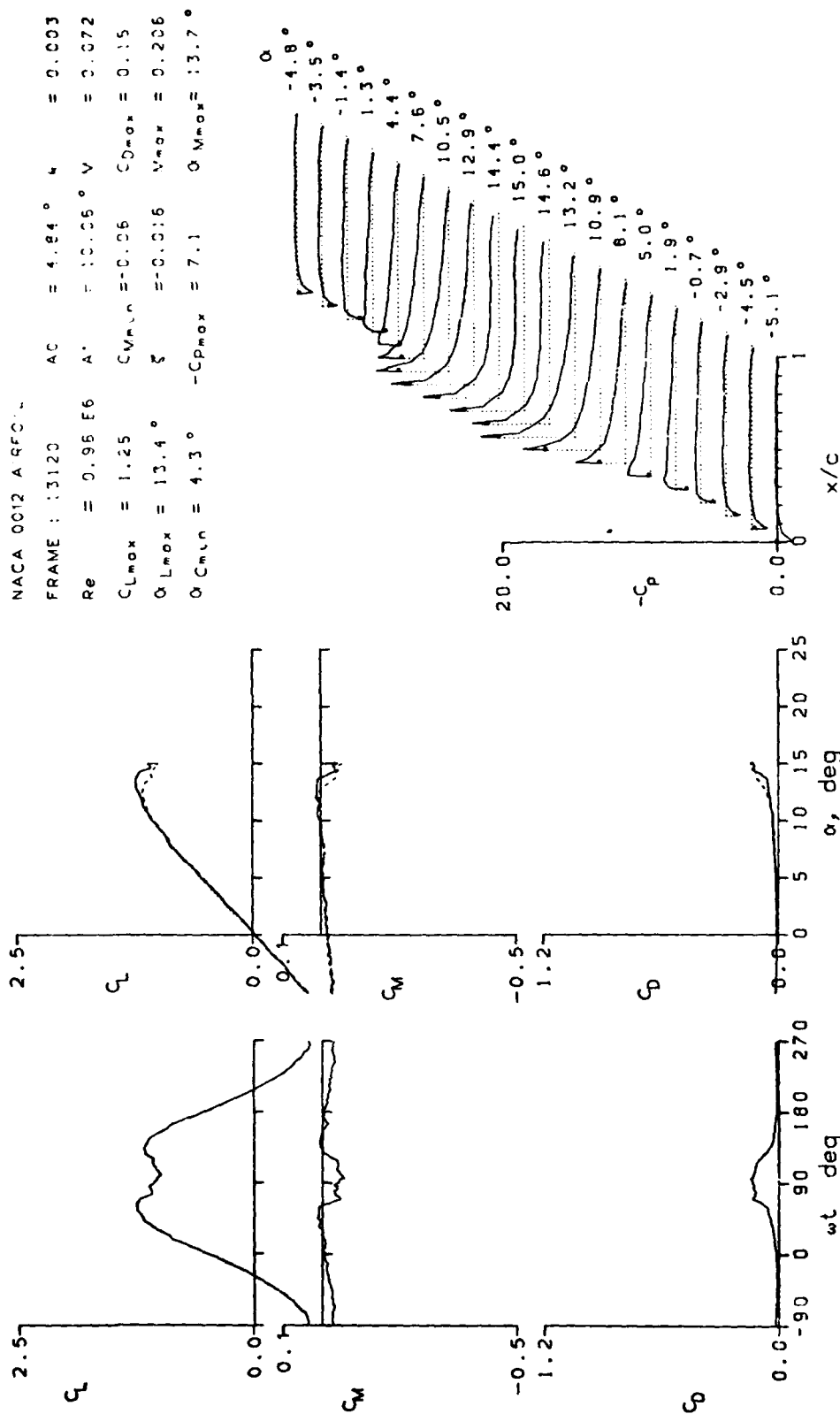


Figure 12.- Continued.

NACA 6012 AIRFOIL
 FRAME : 13205 $A_0 = 4.84^\circ$ $\mu = 0.003$
 $Re = 0.49 E6$ $A^* = 10.06^\circ M$ $= 0.036$
 $C_{Lmax} = 1.13$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.23$
 $\alpha_{Lmax} = 12.6^\circ$ $\xi = -0.009$ $M_{max} = 0.094$
 $\alpha_{Cmin} = 4.3^\circ$ $-C_{Dmax} = 5.6$ $\alpha_{Mmax} = 12.1^\circ$

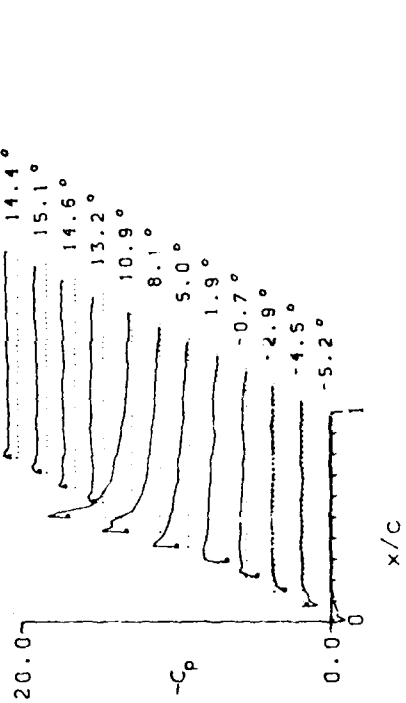
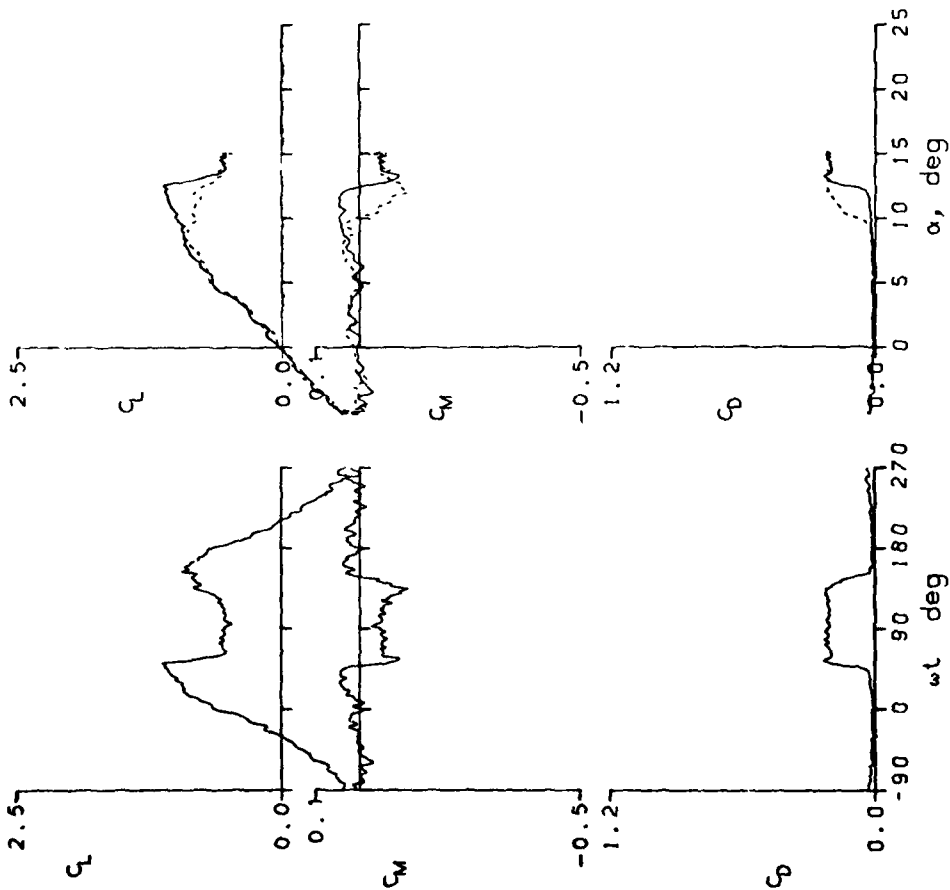


Figure 12.- Continued.

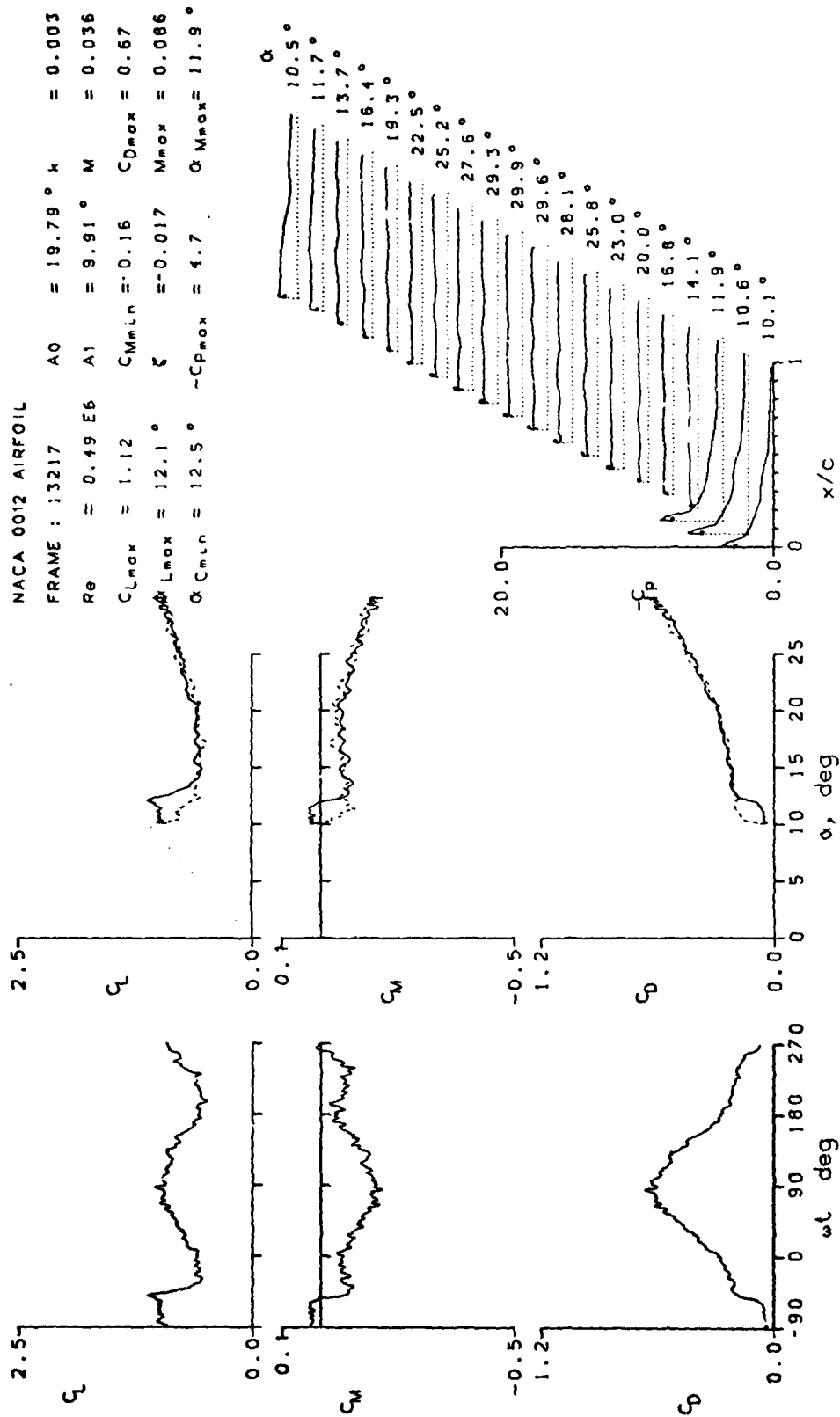


Figure 12.- Continued.

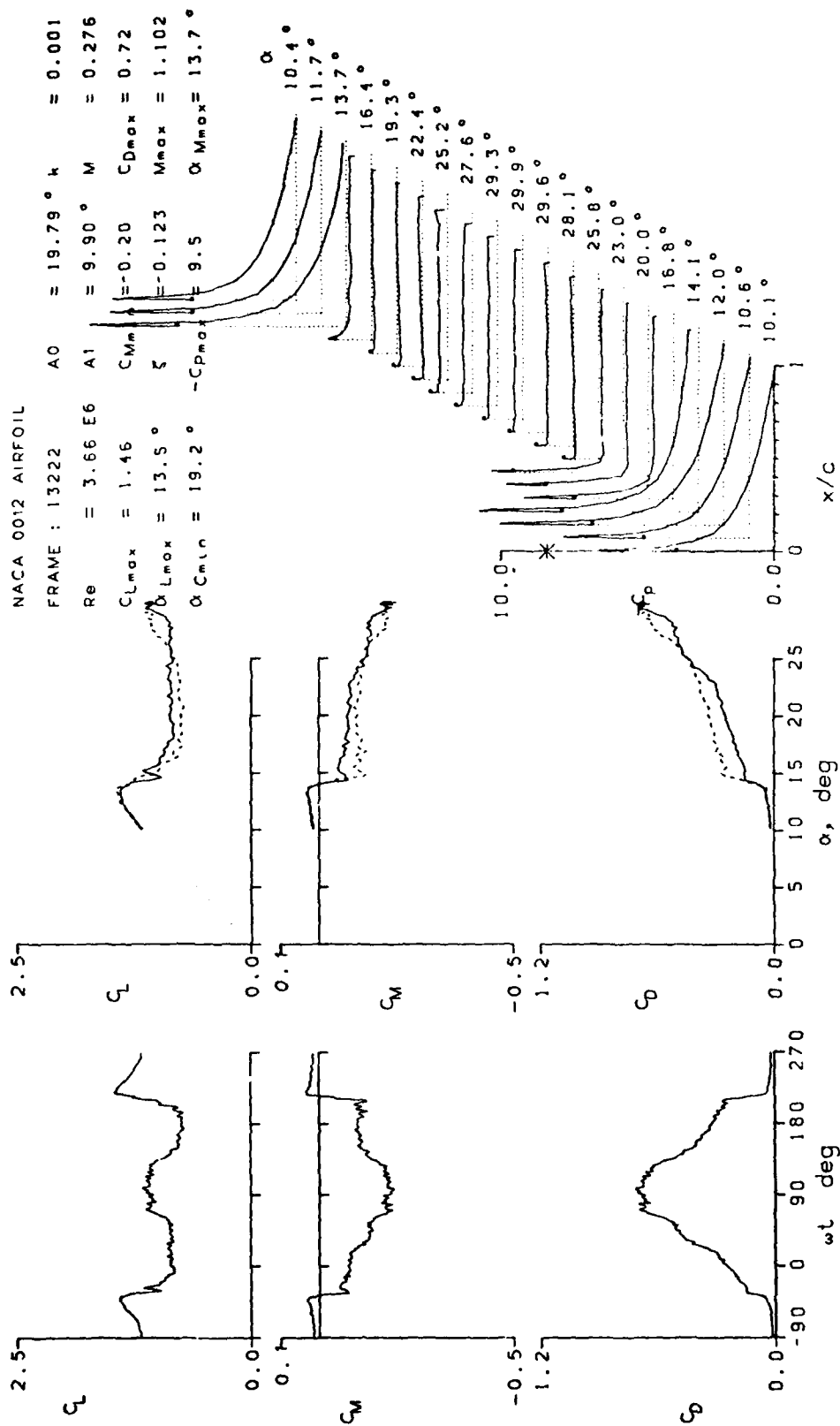


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 13303	A0 = 6.80°	k = 0.001
Re = 3.30 E6	A1 = 10.00°	M = 0.247
C _{Lmax} = 1.57	C _{Mmin} = -0.08	C _{Dmax} = 0.19
α _{Lmax} = 15.5°	ζ = -0.057	M _{max} = 1.033
α _{Cmin} = 6.3°	-C _{pmax} = 11.0	α _{Mmax} = 15.8°

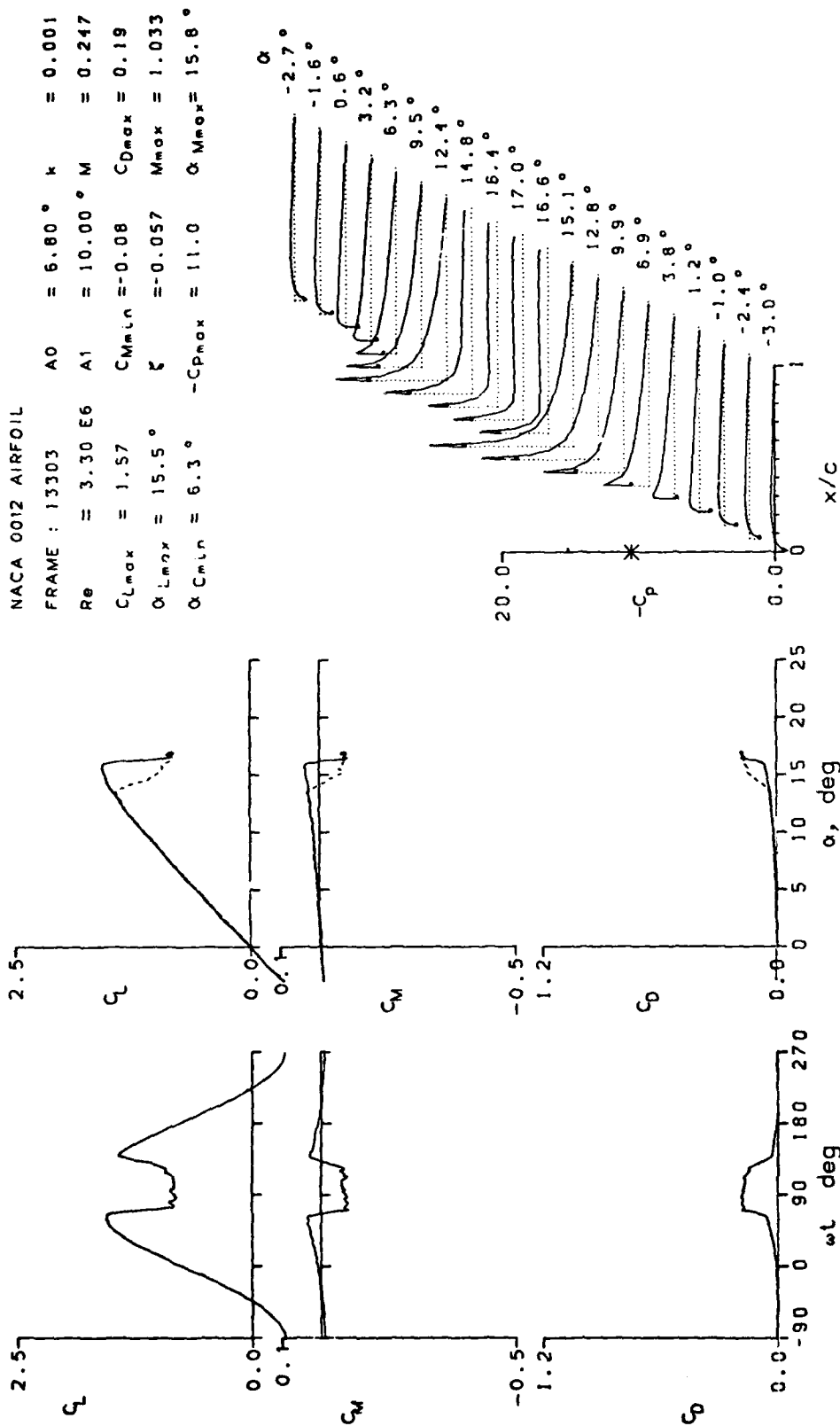


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 13308	A0 = 6.79°	k = 0.001
Re = 2.88 E6	A1 = 10.00°	M = 0.215
C _{Lmax} = 1.64	C _{Mmin} = -0.08	C _{Dmax} = 0.21
α _{Lmax} = 16.2°	ξ = -0.100	M _{max} = 0.874
α _{Cmin} = 6.3°	-C _{Dmax} = 11.5	α _{Mmax} = 16.3°

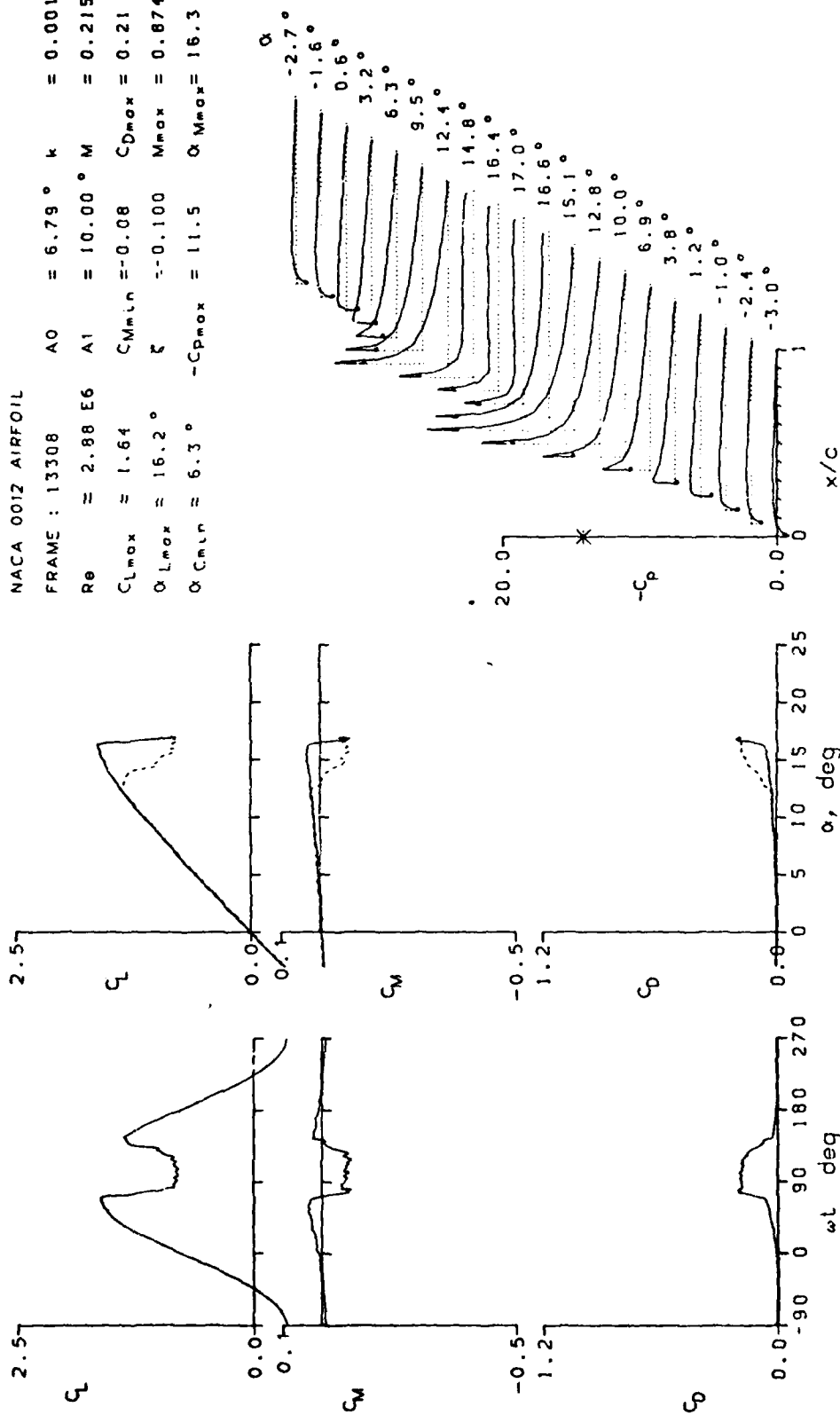


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 13310 $A_0 = 6.79^\circ$ $k = 0.001$
 $R_0 = 2.88 \text{ E6}$ $A_1 = 10.00^\circ$ $M = 0.216$
 $C_{L_{\max}} = 1.64$ $C_{M_{\min}} = -0.09$ $C_{D_{\max}} = 0.21$
 $\alpha_{L_{\max}} = 16.0^\circ$ $\xi = -0.072$ $M_{\max} = 0.880$
 $\alpha_{C_{min}} = 6.3^\circ$ $-C_{D_{\max}} = 11.5$ $\alpha_{M_{\max}} = 16.1^\circ$

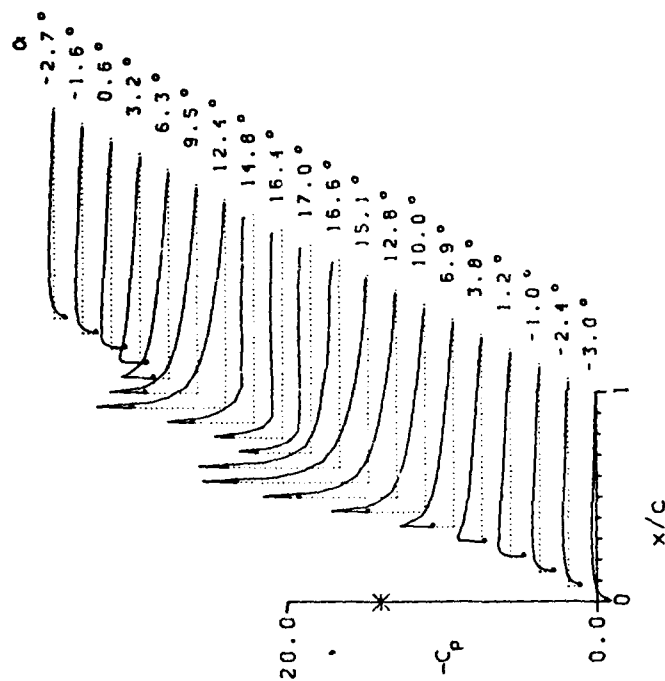
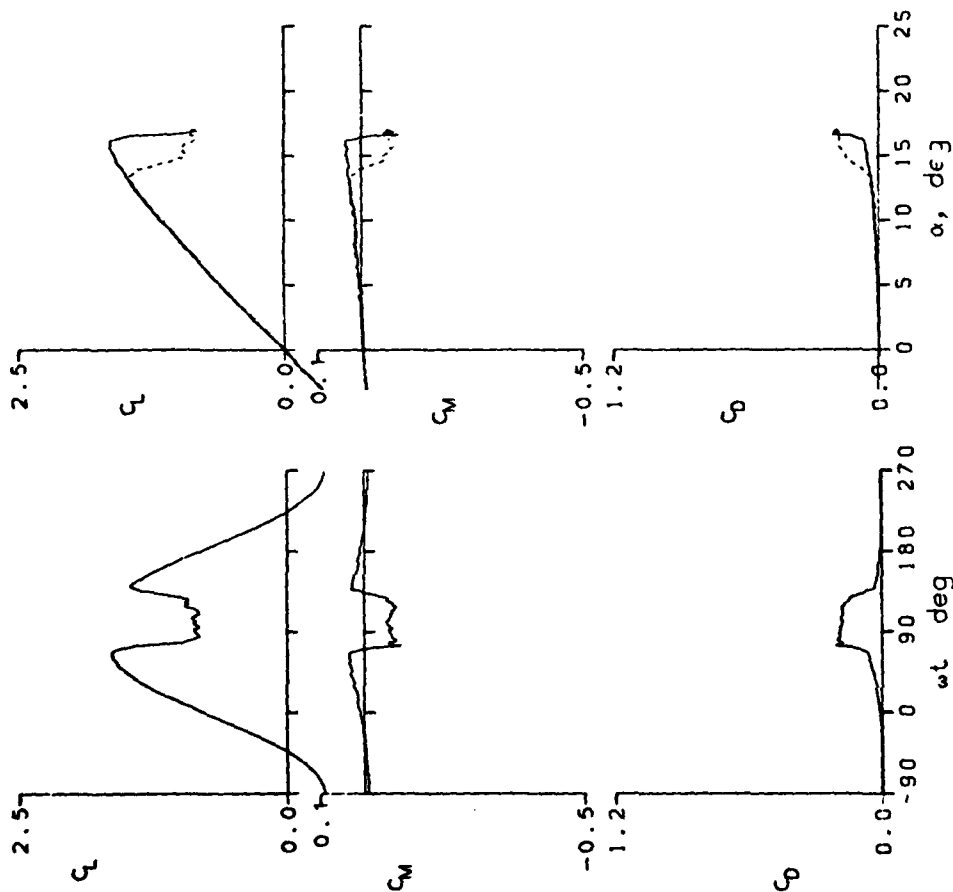


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 17313	A0 = 6.80°	k = 0.001	TRIP
R0 = 2.40 E6	A1 = 10.00°	M = 0.181	
C _{Lmax} = 1.47	C _{Mmin} = -0.11	C _{Dmax} = 0.26	
α _{Lmax} = 15.1°	ξ = -0.135	M _{max} = 0.624	
α _{Cmin} = 6.3°	-C _{Dmax} = 9.2	α _{Mmax} = 15.1°	

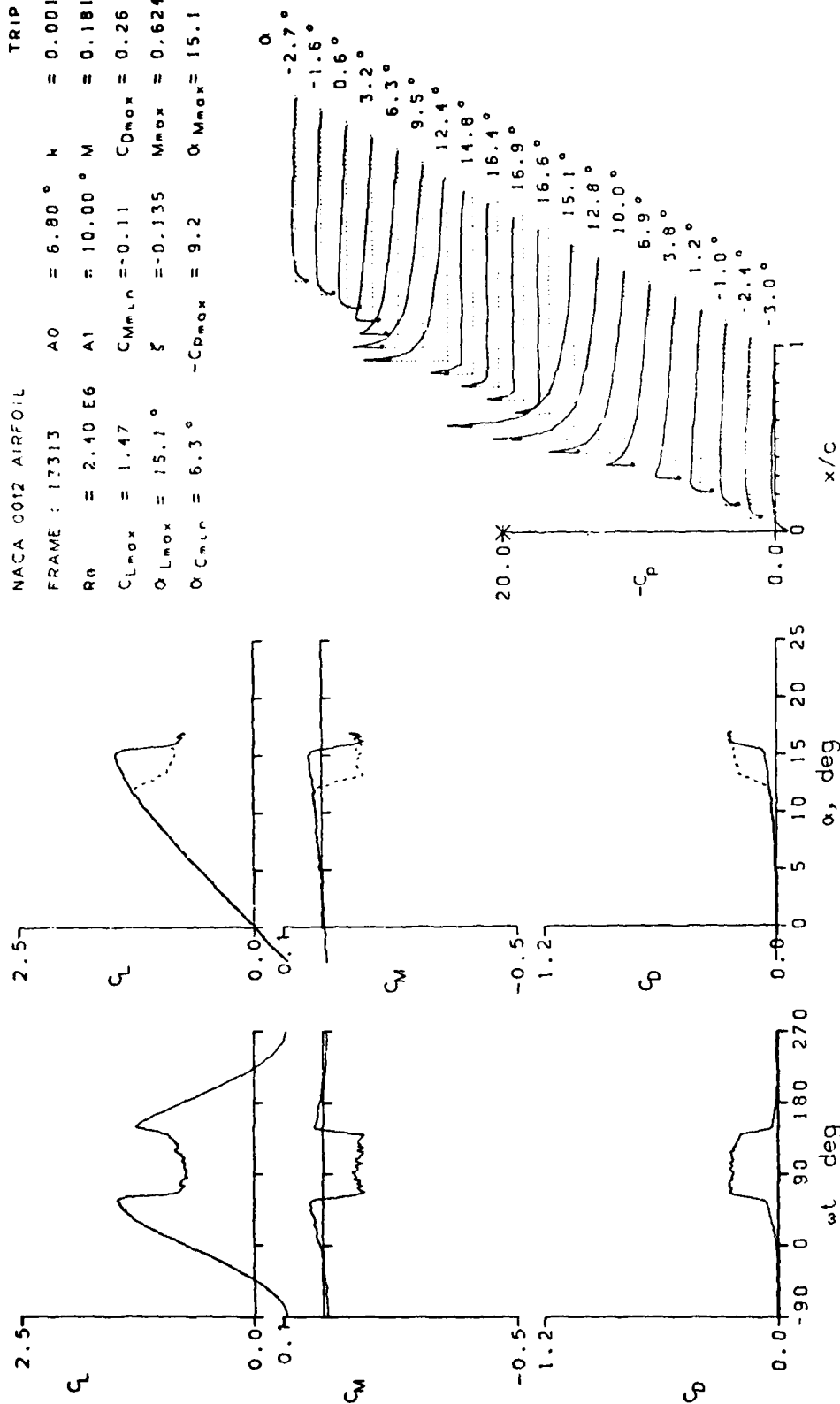


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP

FRAME : 13321 $A_0 = 6.85^\circ$ $k = 0.001$

$Re = 3.74 \text{ E}6$ $A_1 = 9.97^\circ$ $M = 0.294$

$C_{Lmax} = 1.37$ $C_{Mmin} = -0.14$ $C_{Dmax} = 0.31$

$\alpha_{Lmax} = 13.1^\circ$ $\xi = -0.081$ $M_{max} = 1.217$

$\alpha_{Cmin} = 6.4^\circ$ $-C_{Dmax} = 9.5$ $\alpha_{Mmax} = 13.1^\circ$

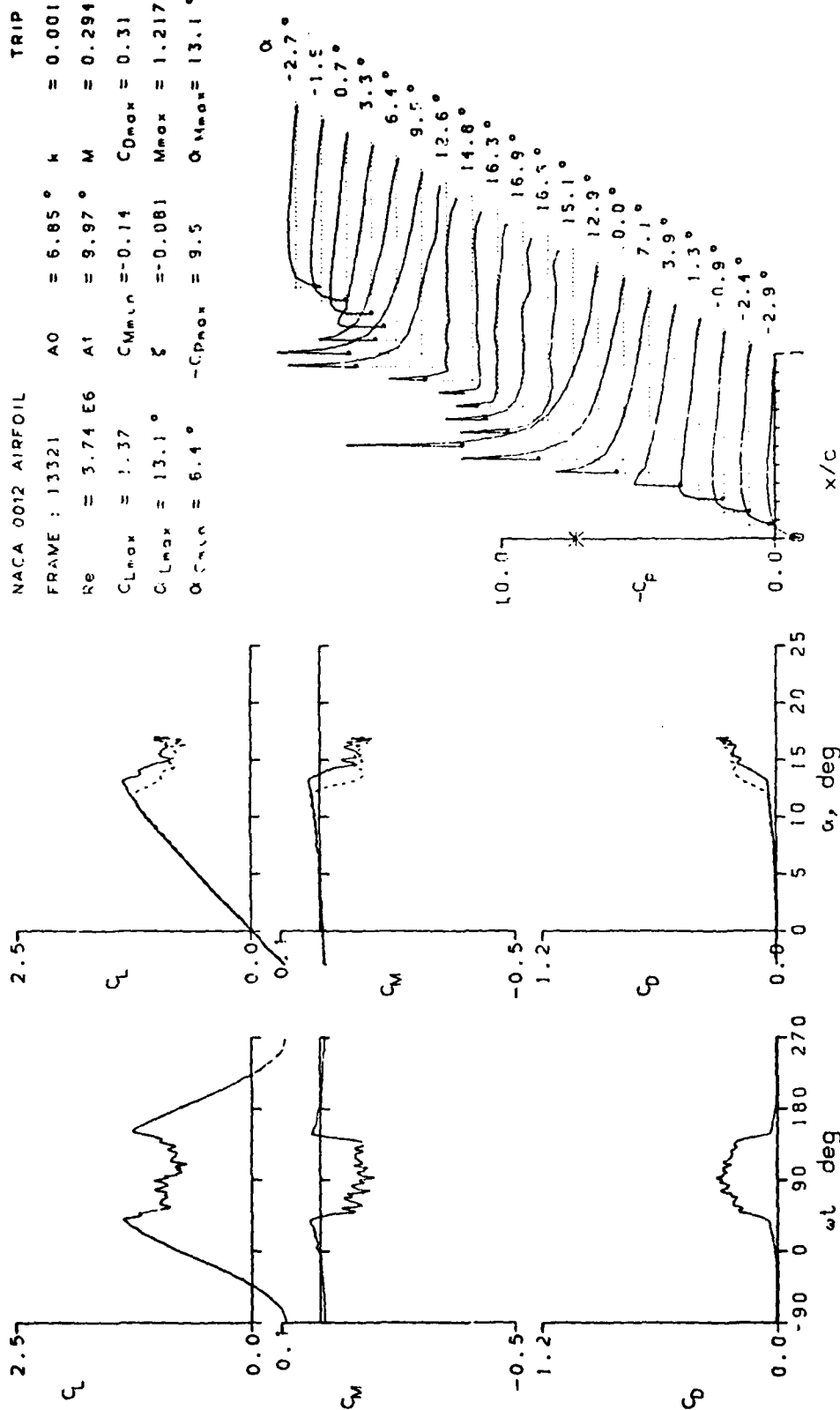


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14019	$A_0 = 14.83^\circ$	$k = 0.050$	TRIP
$Re = 2.45 \times 10^6$	$A' = 9.87^\circ$	$M = 0.183$	
$C_{Lmax} = 1.92$	$C_{Mmin} = -0.35$	$C_{Dmax} = 0.68$	
$\alpha_{Lmax} = 13.8^\circ$	$\xi = 0.253$	$M_{max} = 0.694$	
$\alpha_{Cmin} = 14.4^\circ$	$-C_{pmax} = 11.0$	$\alpha_{Mmax} = 17.7^\circ$	

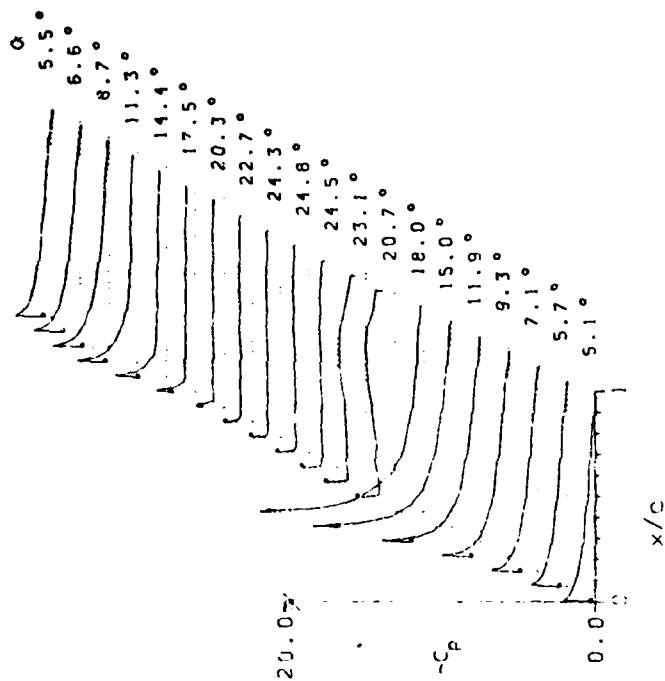
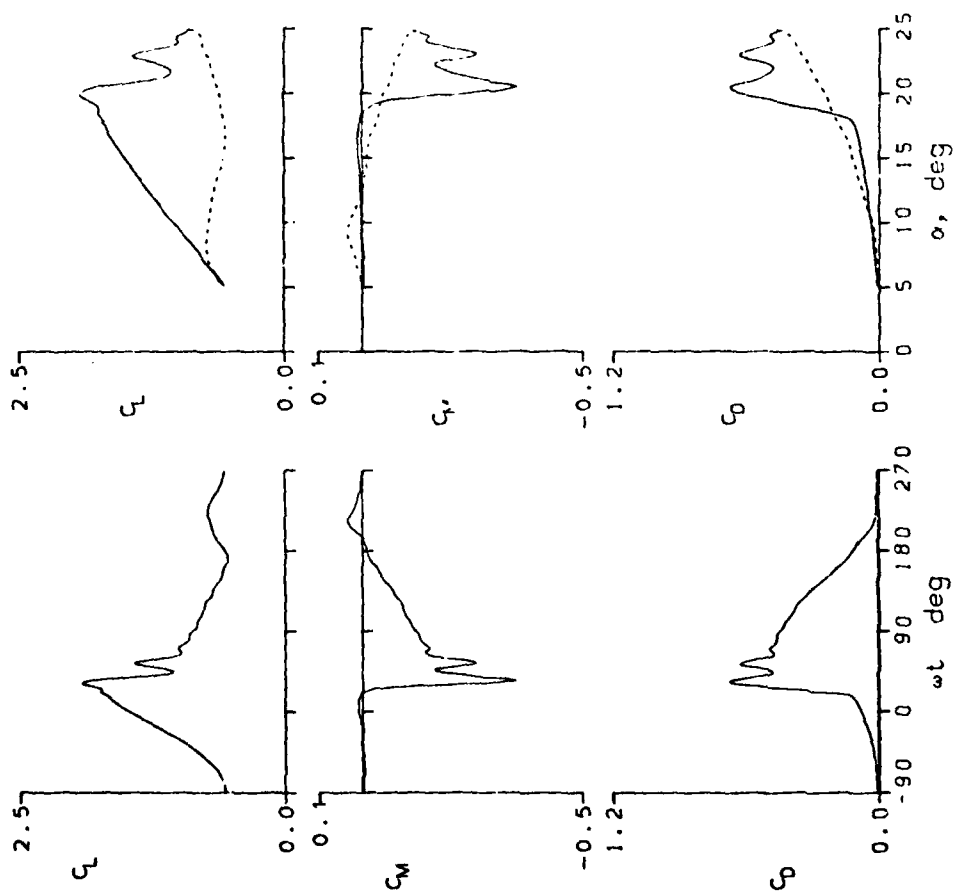


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14021	A0 = 14.83°	k = 0.100
Re = 2.43 EG	A1 = 9.90°	M = 0.182
C _{Lmax} = 2.09	C _{Mmin} = -0.42	C _{Dmax} = 0.87
α _{Lmax} = 21.8°	ξ = 0.257	M _{max} = 0.710
α _{Cmin} = 14.4°	-C _{Dmax} = 11.5	α _{Mmax} = 18.6°

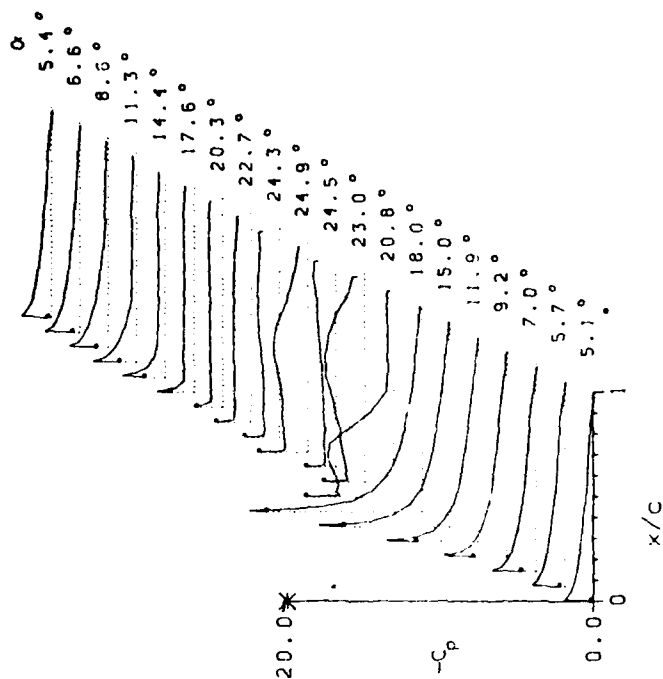
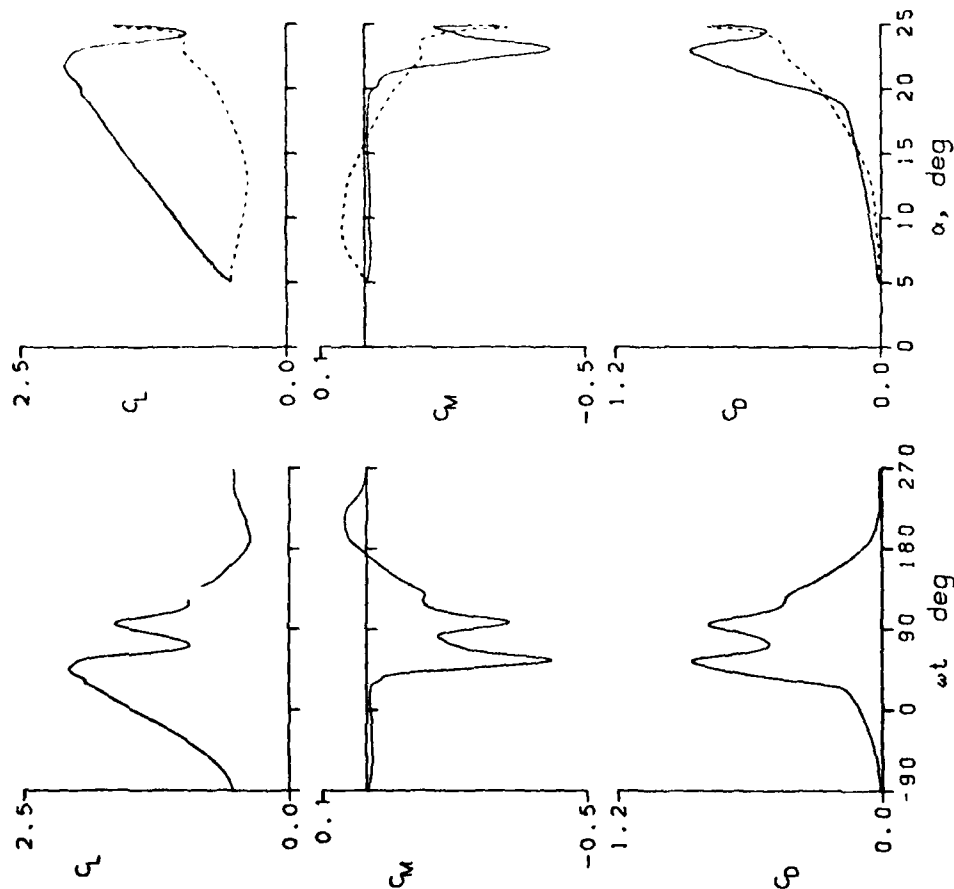


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14023	$\Delta \alpha = 14.83^\circ$	$\mu = 0.150$
$Re = 2.43 \times 10^6$	$\Delta \alpha' = 9.89^\circ$	$M = 0.182$
$C_{Lmax} = 2.17$	$C_{Mmin} = -0.46$	$C_{Dmax} = 1.00$
$\alpha_{Lmax} = 23.6^\circ$	$\xi = 0.011$	$M_{max} = 0.723$
$\alpha_{Cmin} = 14.4^\circ$	$-C_{Dmax} = 12.0$	$\alpha_{Mmax} = 19.5^\circ$

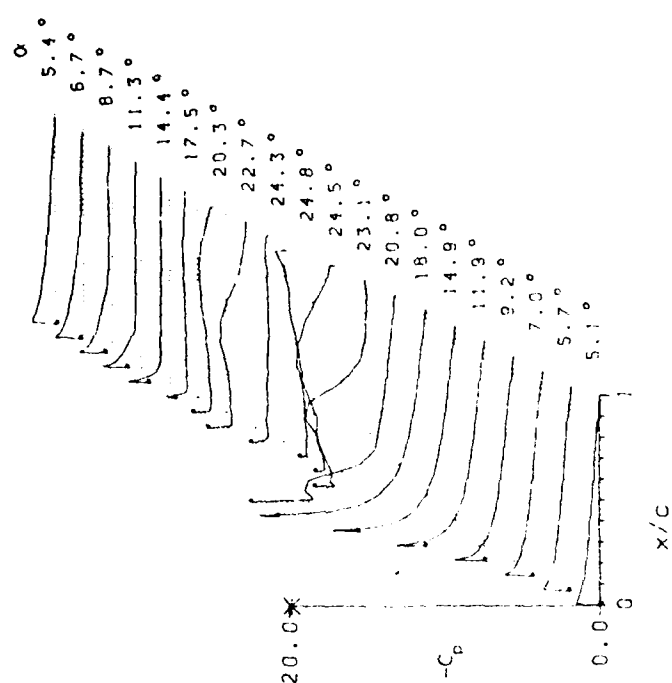
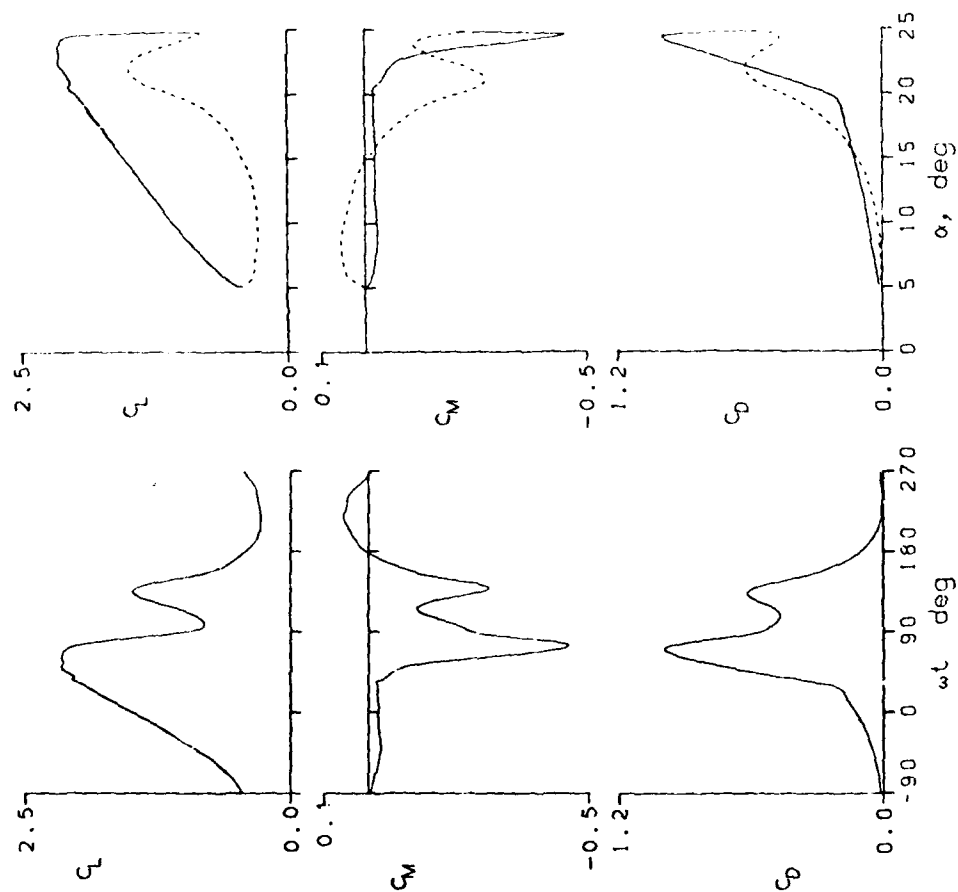


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP

FRAME : 14104	A0 = 14.83°	k = 0.050
Re = 2.45 E6	A1 = 9.90°	M = 0.183
C _{Lmax} = 1.9	C _{Mmin} = -0.35	C _{Dmax} = 0.67
α _{Lmax} = 19.8°	ζ = 0.251	M _{max} = 0.692
α _{Cmin} = 14.4°	-C _{pmax} = 10.9	α _{Mmax} = 17.8°

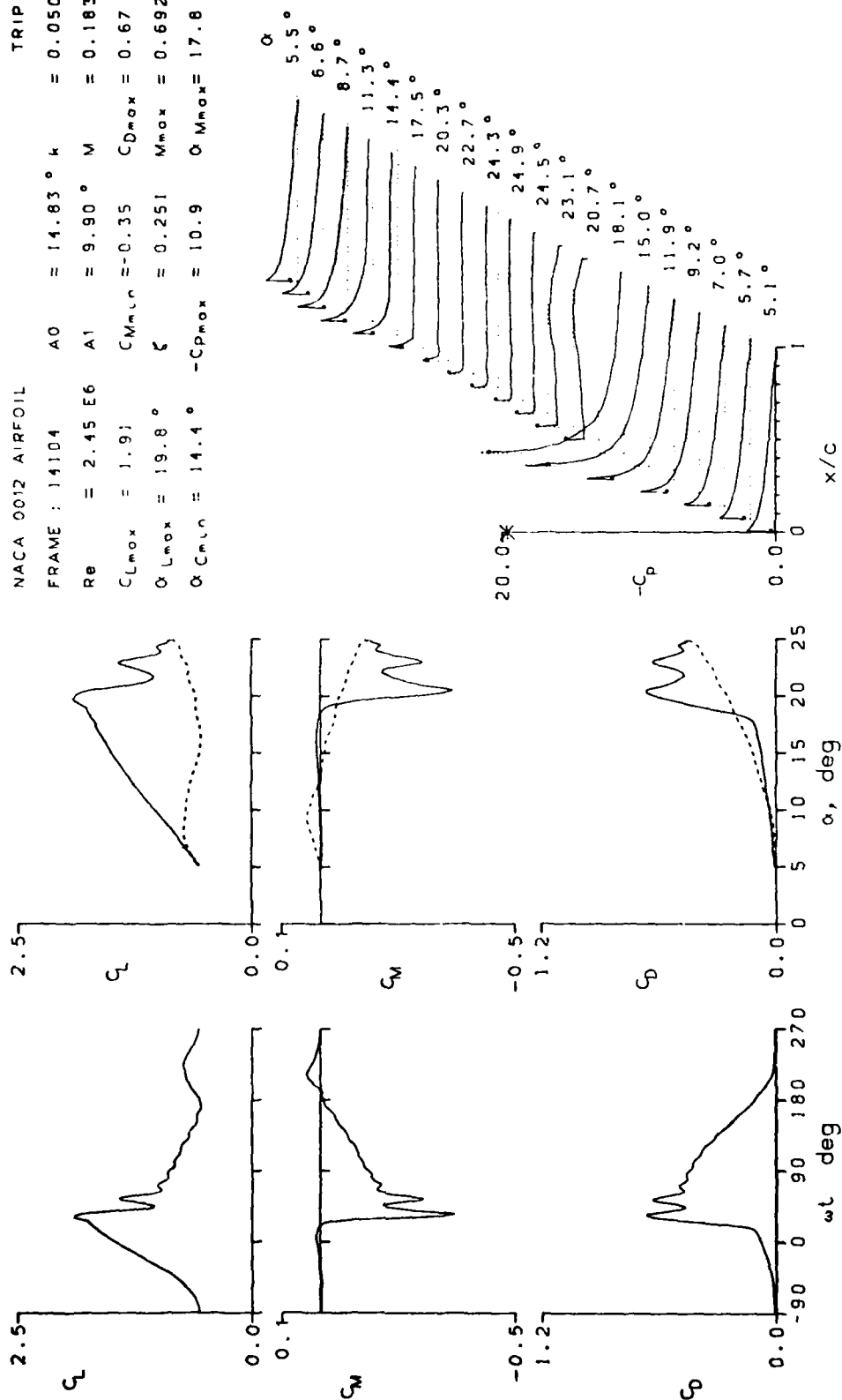


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14:05	A0 = 14.83°	k = 0.099	TRIP
Re = 2.45 E6	A' = 9.90°	M = 0.184	
C _{Lmax} = 2.07	C _{Mmin} = -0.42	C _{Dmax} = 0.86	
α _{Lmax} = 21.9°	ξ = 0.269	M _{max} = 0.714	
α _{Cmin} = 14.4°	-C _{Dmax} = 11.5	α _{Mmax} = 18.6°	

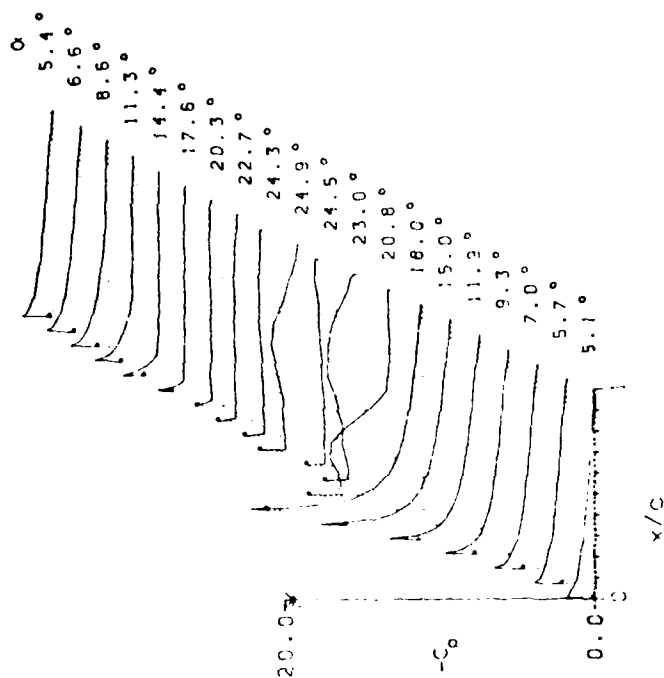
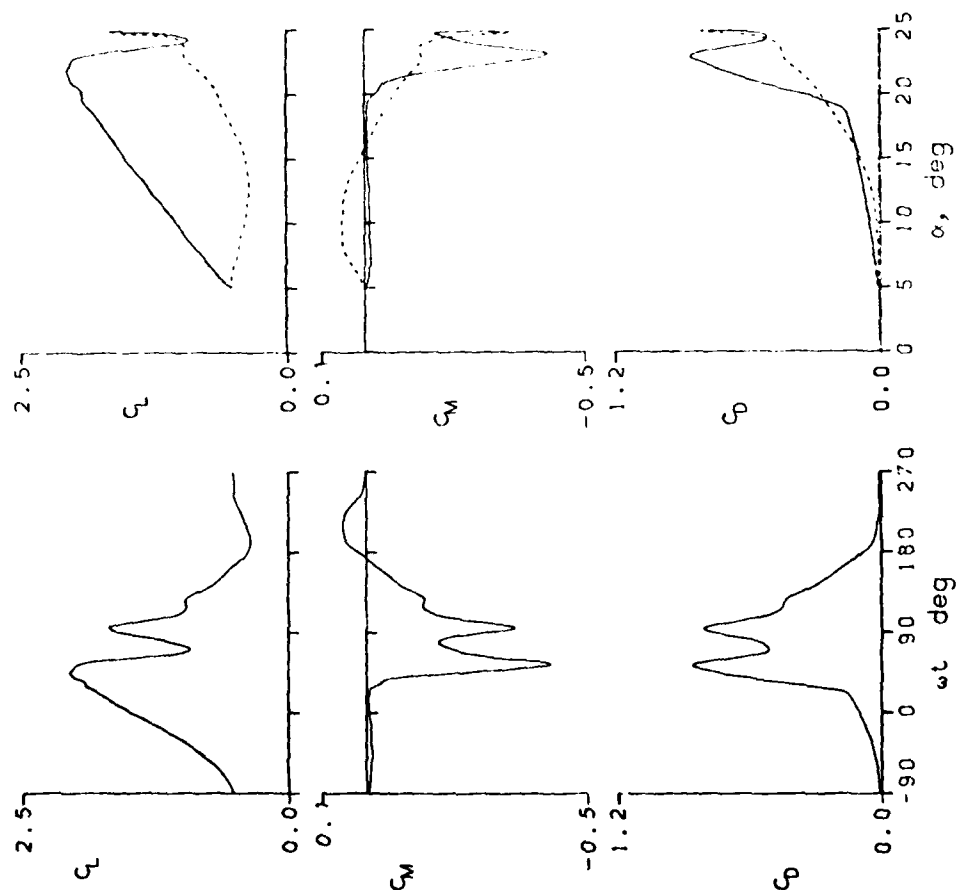


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14108	A0 = 14.82°	k = 0.149	TRIP
Re = 2.44 E6	A1 = 9.89°	M = 0.183	
CLmax = 2.16	CMmin = -0.45	CDmax = 0.99	
αLmax = 22.5°	ξ = 0.029	Mmax = 0.727	
αCMmin = 14.4°	-CDmax = 11.9	αMmax = 19.5°	

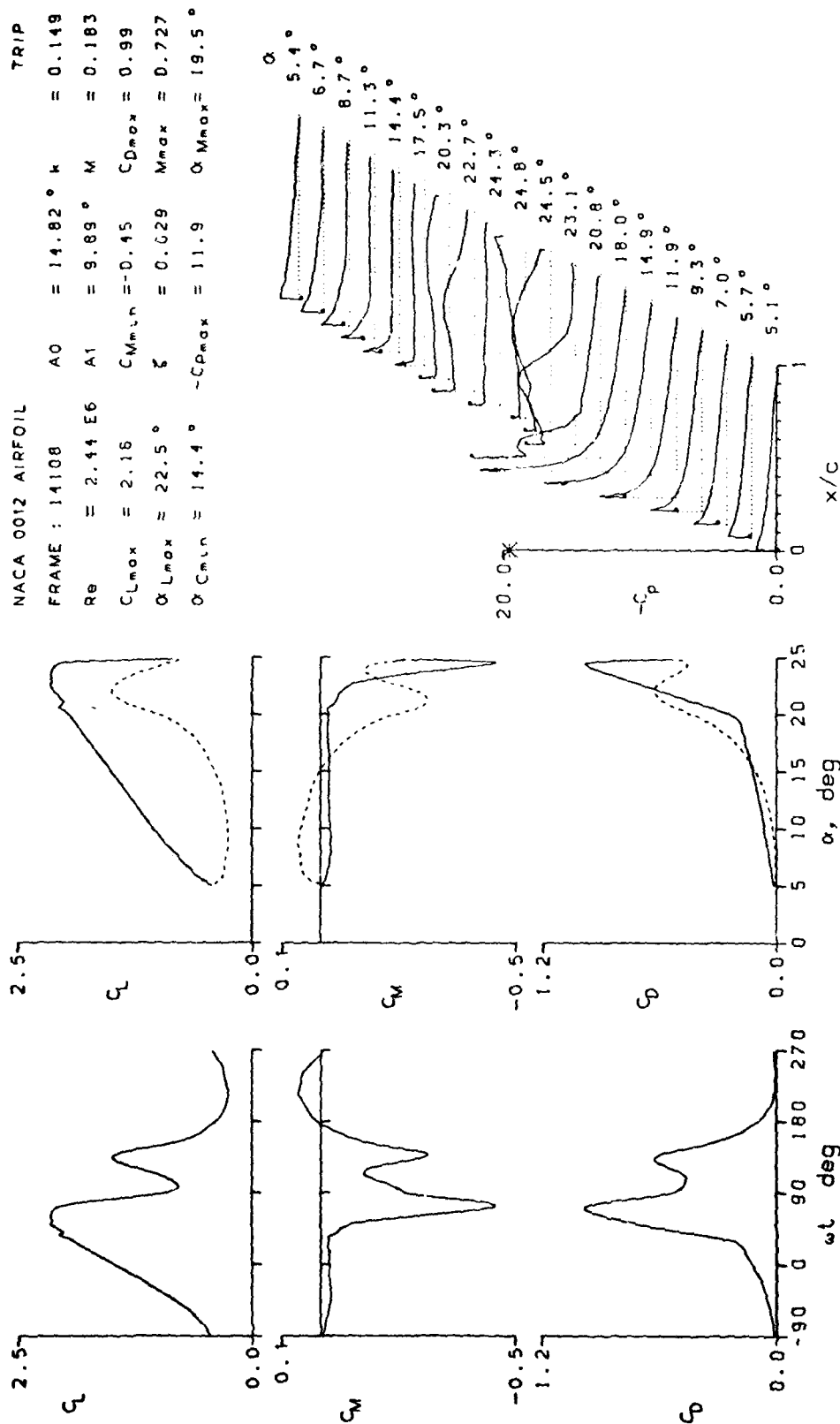


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME: 14117	A0 = 14.85°	k = 0.026	TRIP
Re = 3.84 E6	A1 = 9.90°	M = 0.293	
CLmax = 1.56	CMmin = -0.23	CDmax = 0.46	
αLmax = 15.0°	ξ = 0.088	Mmax = 1.325	
αCmin = 14.4°	-CPmax = 10.5	αMmax = 14.4°	

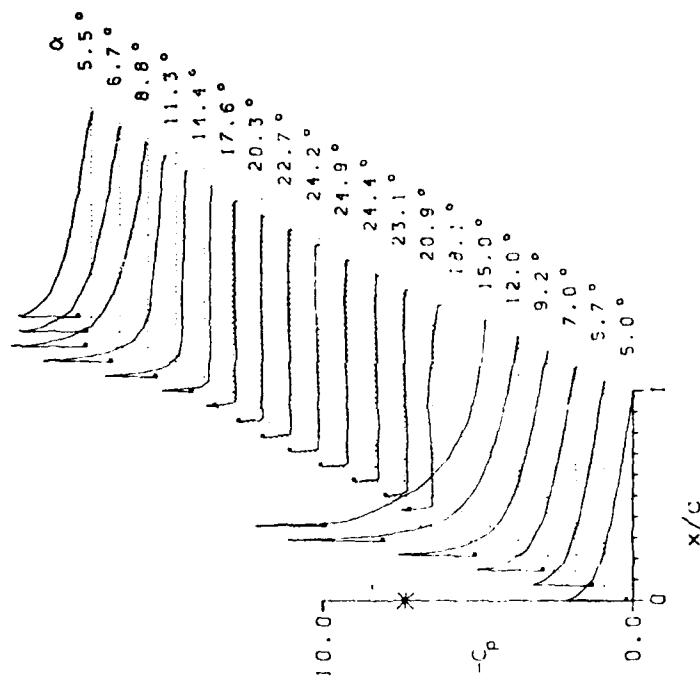
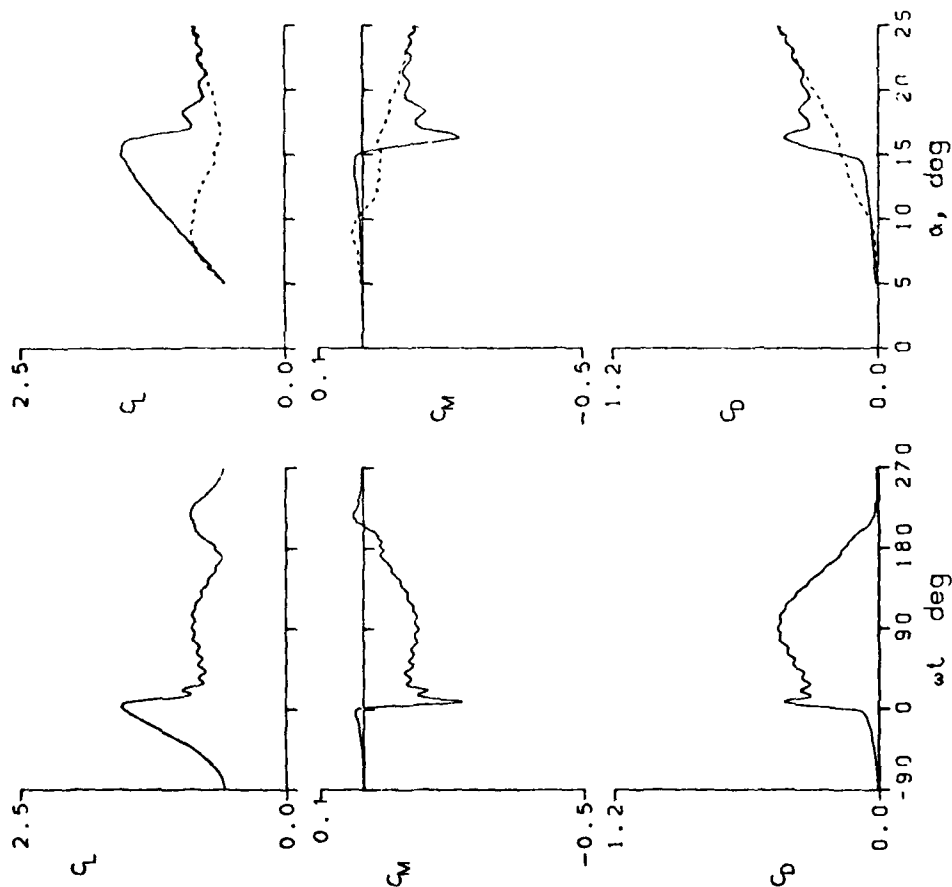


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP

FRAME : 14:19 $A_0 = 14.82^\circ$ $k = 0.051$

$Re = 3.82 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.293$

$C_{Lmax} = 1.71$ $C_{Mmin} = -0.31$ $C_{Dmax} = 0.56$

$\alpha_{Lmax} = 17.5^\circ$ $\zeta = 0.341$ $M_{max} = 1.336$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 10.6$ $\alpha_{Mmax} = 15.0^\circ$

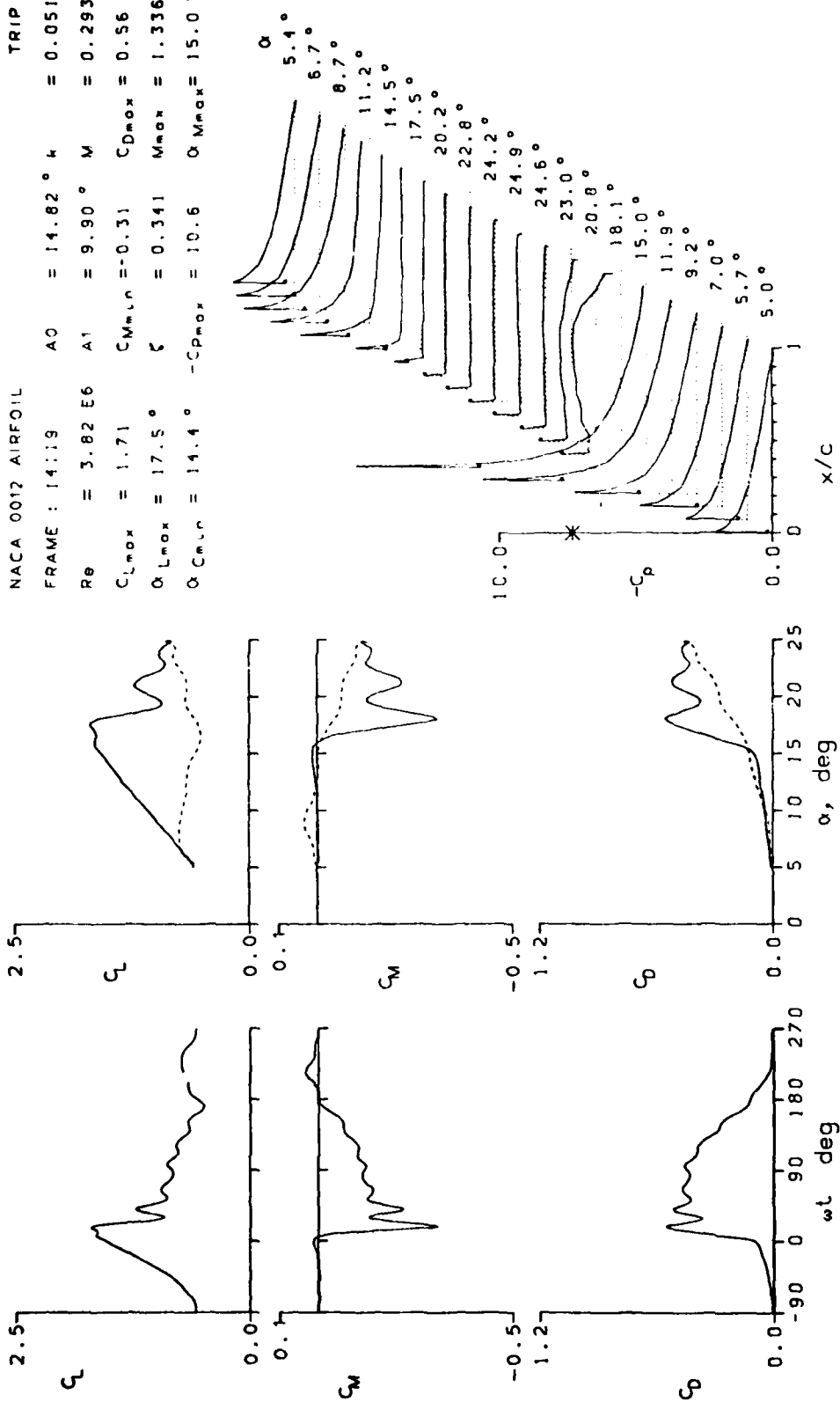


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP
 FRAME : 14200 A0 = 14.83° k = 0.025
 Re = 3.82 E6 A1 = 9.88° M = 0.294
 C_{Lmax} = 1.54 C_{Mmin} = -0.24 C_{Dmax} = 0.46
 α_{Lmax} = 14.7° ζ = 0.055 M_{max} = 1.335
 α_{Cmin} = 14.4° -C_{Dmax} = 10.5 α_{Mmax} = 14.4°

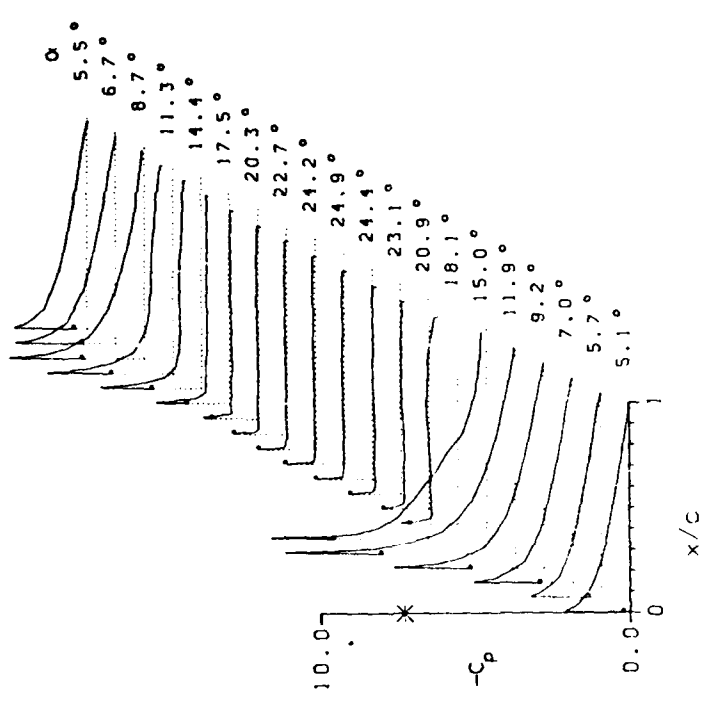
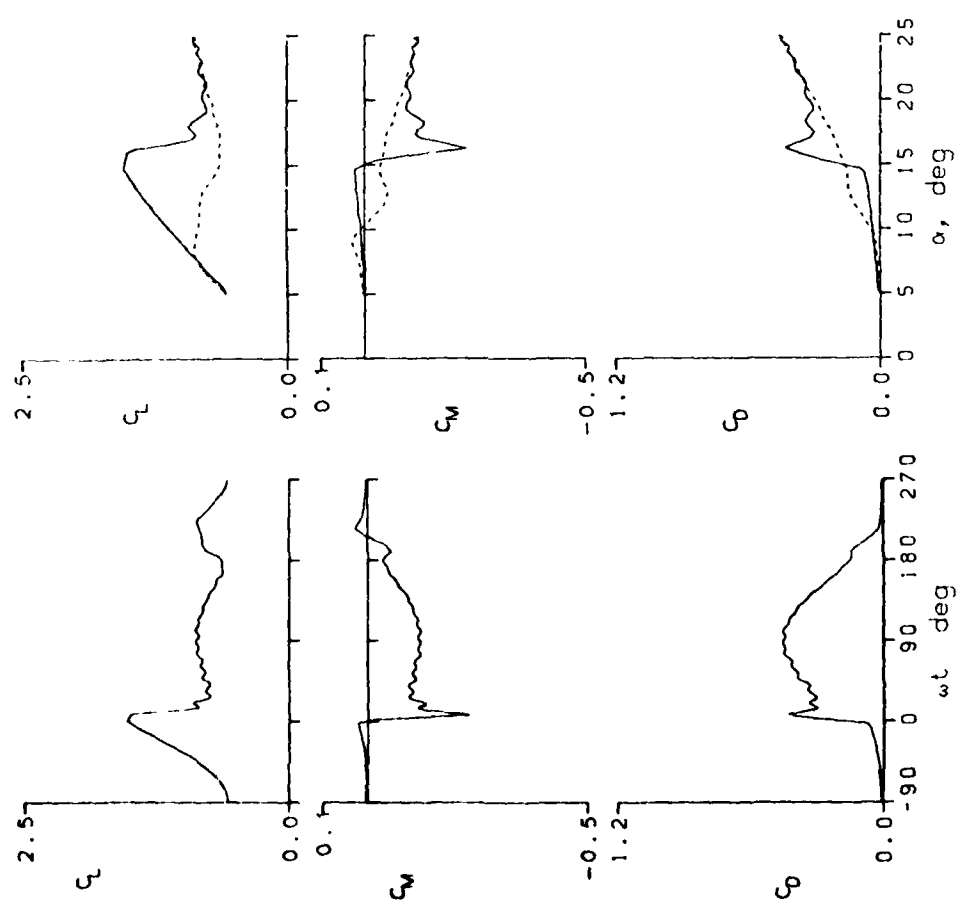


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP

FRAME : 14202 $A_0 = 14.81^\circ$ $k = 0.051$

$Re = 3.79 \text{ E}6$ $A_1 = 9.92^\circ$ $M = 0.293$

$C_{Lmax} = 1.72$ $C_{Mmin} = -0.32$ $C_{Dmax} = 0.57$

$\alpha_{Lmax} = 17.8^\circ$ $\xi = 0.336$ $M_{max} = 1.348$

$\alpha_{Cmin} = 14.3^\circ$ $-C_{Pmax} = 10.7$ $\alpha_{Mmax} = 14.9^\circ$

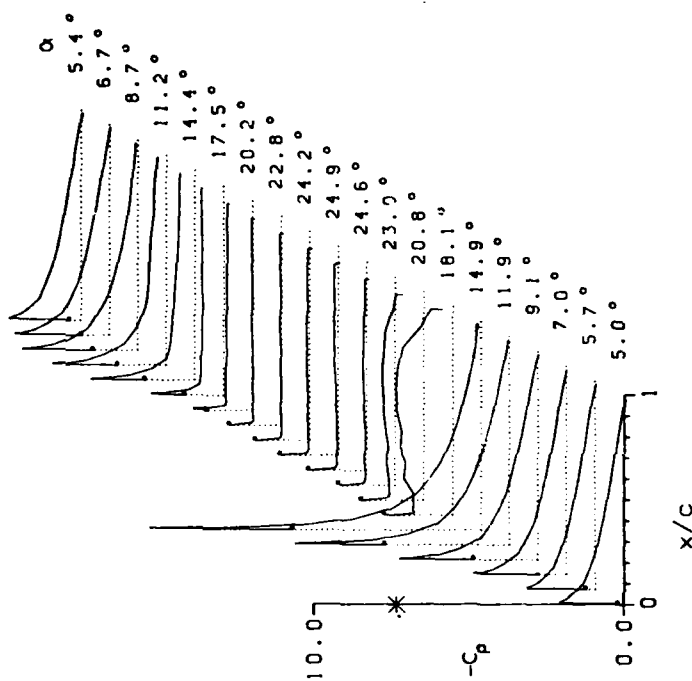
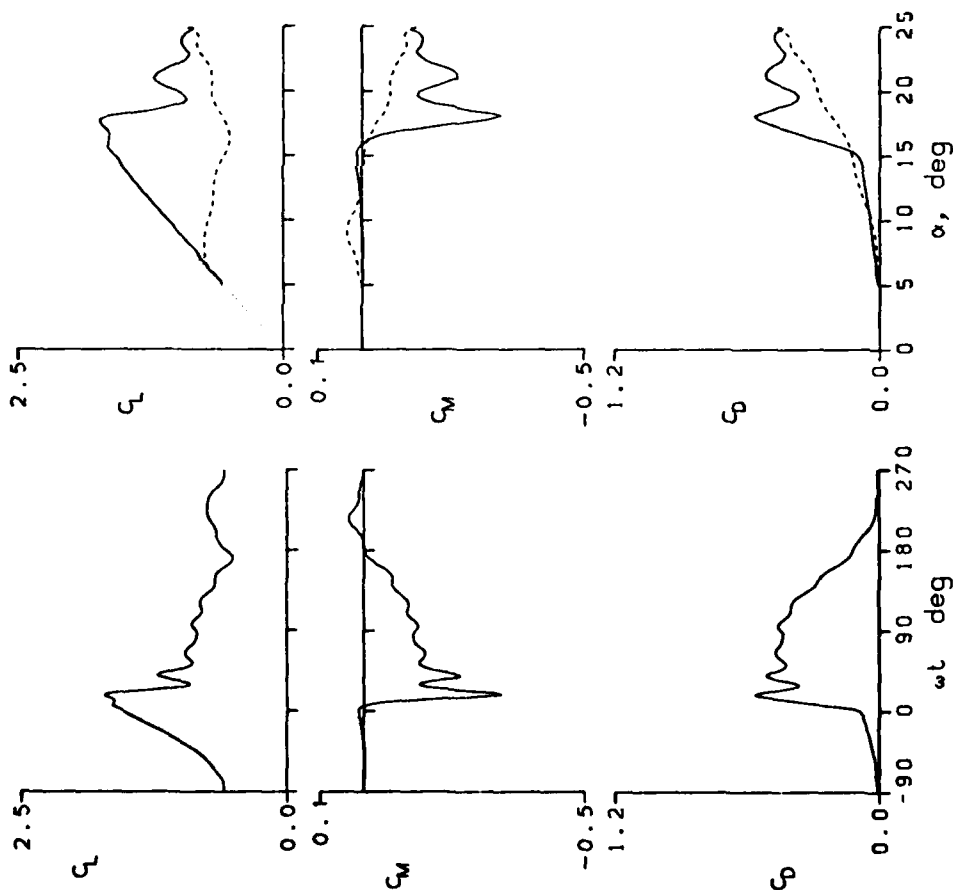


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14208	A0 = 14.84°	k = 0.102	TRIP
Re = 3.76 E6	A' = 9.89°	M = 0.291	
CLmax = 1.95	CMmin = -0.42	CDmax = 0.77	
αLmax = 20.5°	ξ = 0.567	Nmax = 1.366	
αCMmin = 14.4°	-CPmax = 11.0	αMmax = 16.0°	

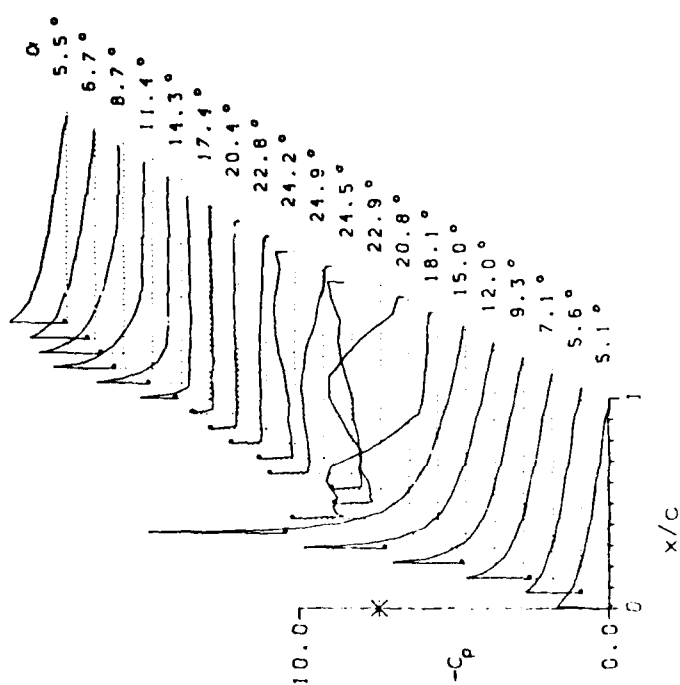
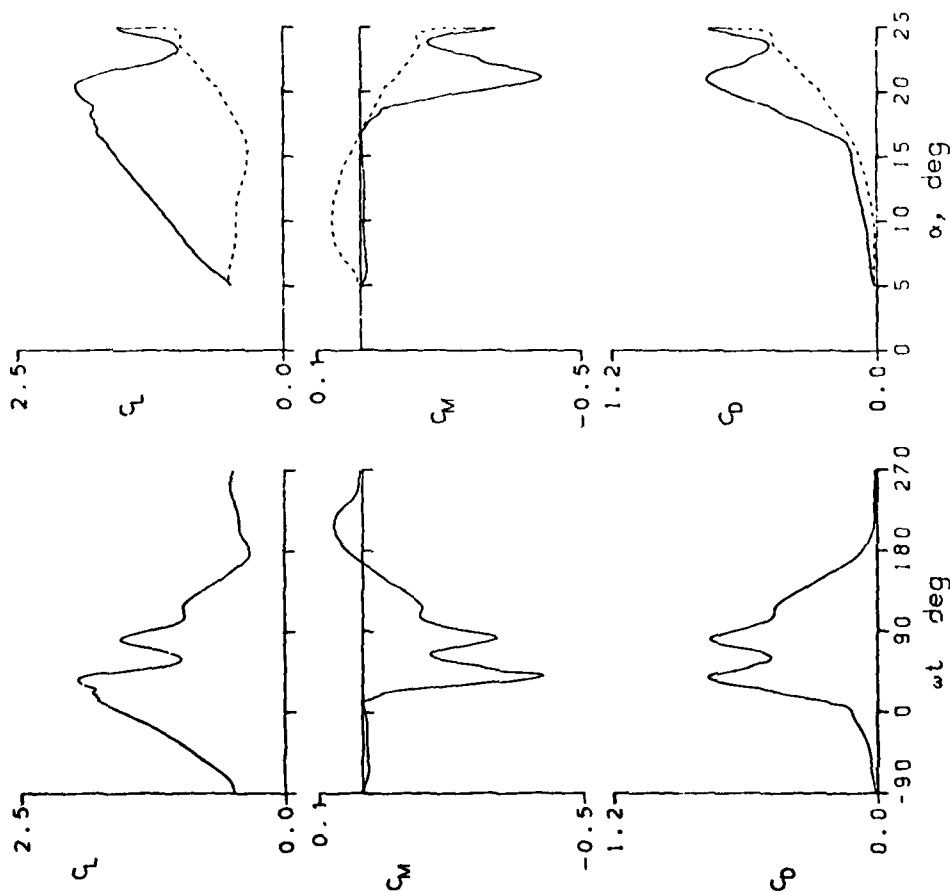


Figure 12.- Continued.

NACA 0012 AIRFOIL TRIP

FRAME : 14210 $A_0 = 14.84^\circ$ $h = 0.101$

$Re = 3.76 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.292$

$C_{Lmax} = 1.95$ $C_{Mmin} = -0.41$ $C_{Dmax} = 0.77$

$\alpha_{Lmax} = 20.5^\circ$ $\xi = 0.549$ $M_{max} = 1.359$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 10.8$ $\alpha_{Mmax} = 16.0^\circ$

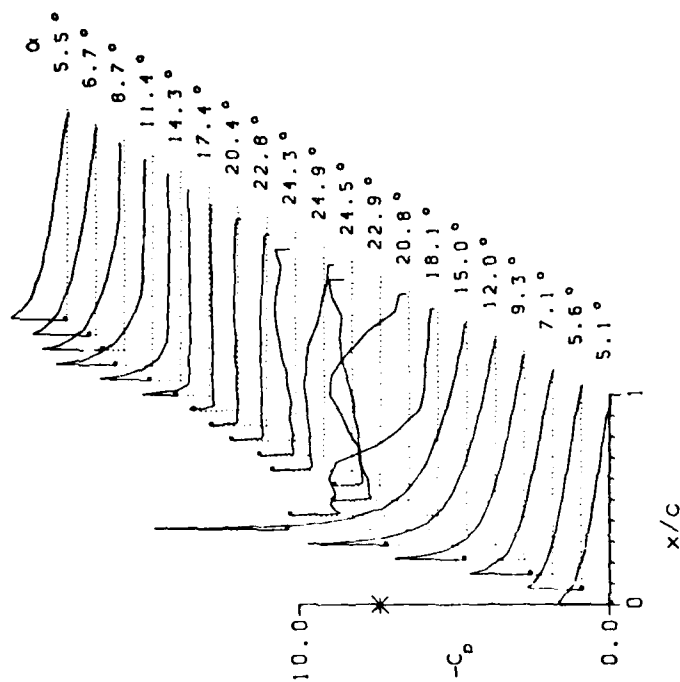
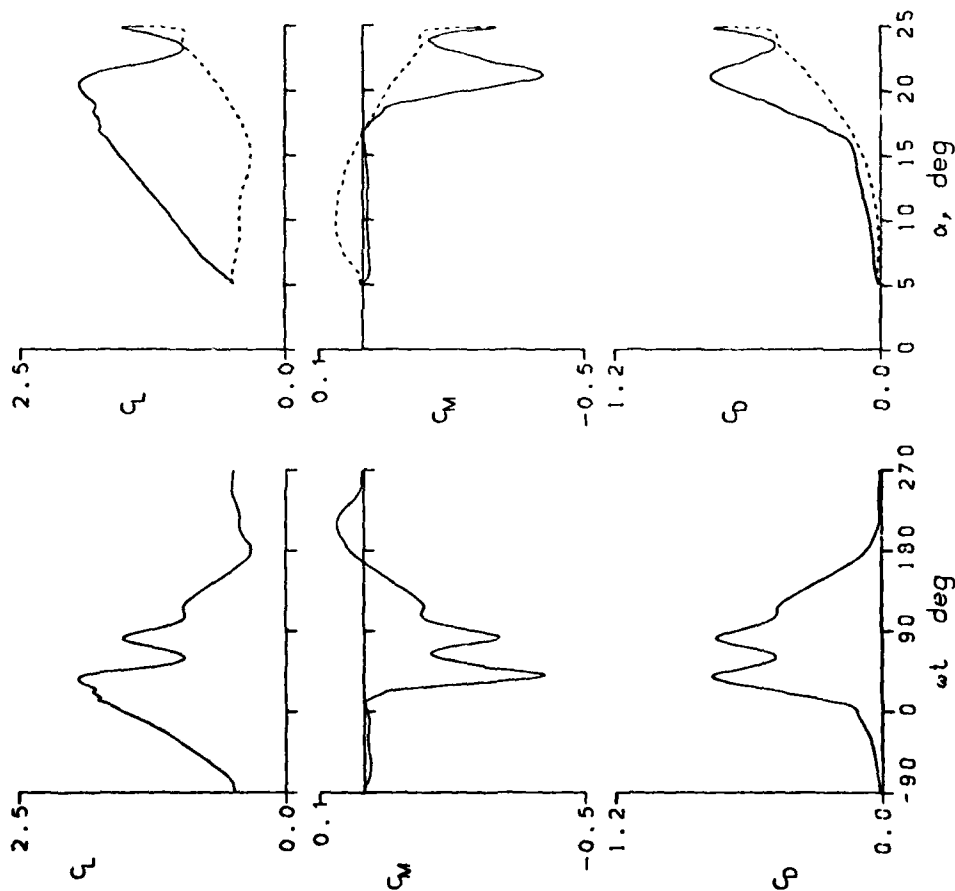


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 14218 $A0 = 14.84^\circ$ $k = 0.025$
 $Re = 3.76 E6$ $A1 = 9.92^\circ$ $M = 0.292$
 $C_{Lmax} = 1.69$ $C_{Mmin} = -0.16$ $C_{Dmin} = 0.45$
 $\alpha_{Lmax} = 16.0^\circ$ $\xi = 0.108$ $M_{max} = 1.208$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Pmax} = 9.5$ $\alpha_{Mmax} = 14.4^\circ$

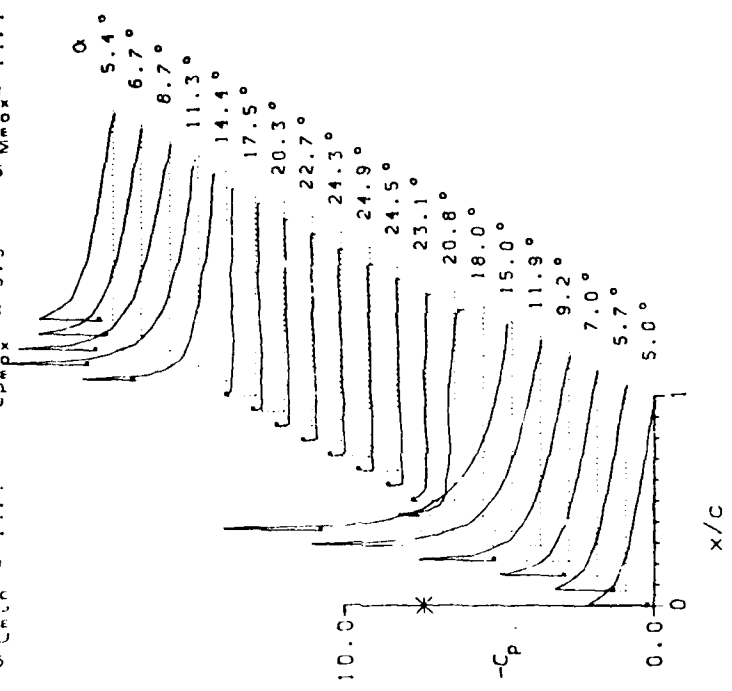
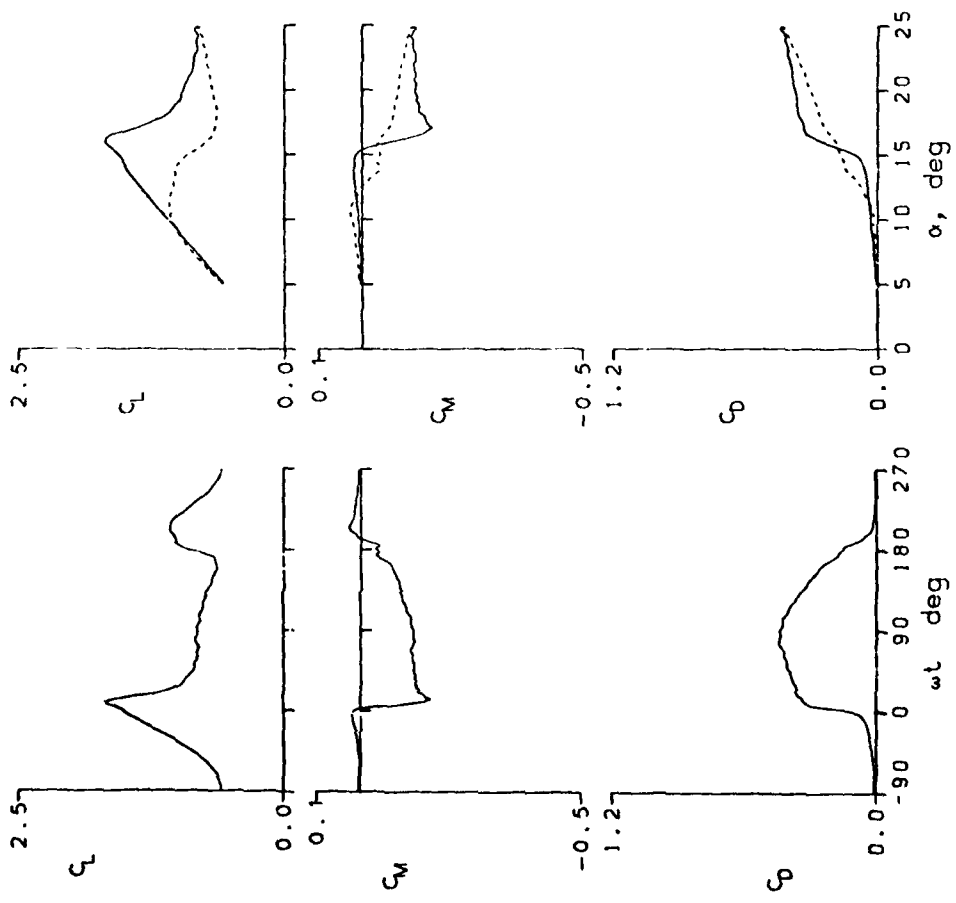


Figure 12.- Continued.

NACA 0012 AIRFOIL
 FRAME : 14219 $A_0 = 14.82^\circ$ $k = 0.051$
 $Re = 3.74 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.291$
 $C_{Lmax} = 1.82$ $C_{Mmin} = -0.22$ $C_{Dmax} = 0.49$
 $\alpha_{Lmax} = 17.5^\circ$ $\alpha_{C} = 0.304$ $M_{max} = 1.213$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Pmax} = 9.7$ $\alpha_{Mmax} = 14.7^\circ$

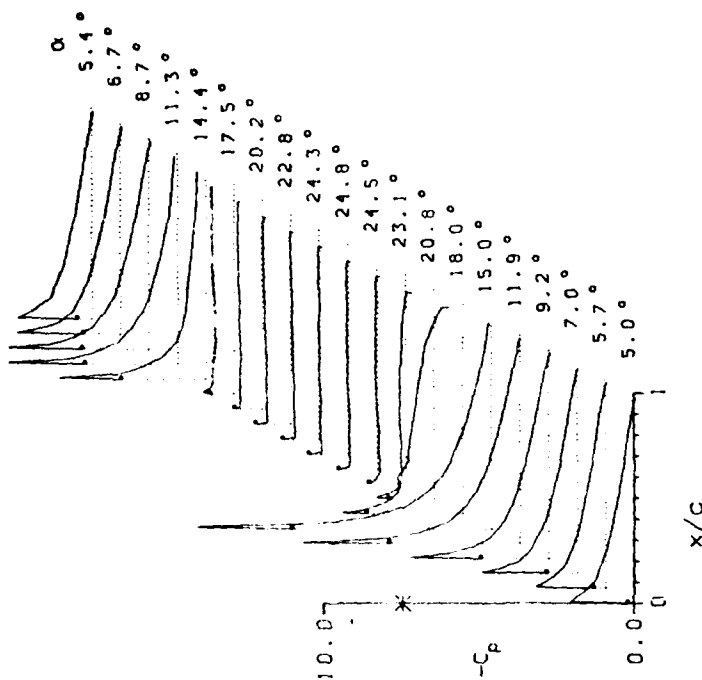
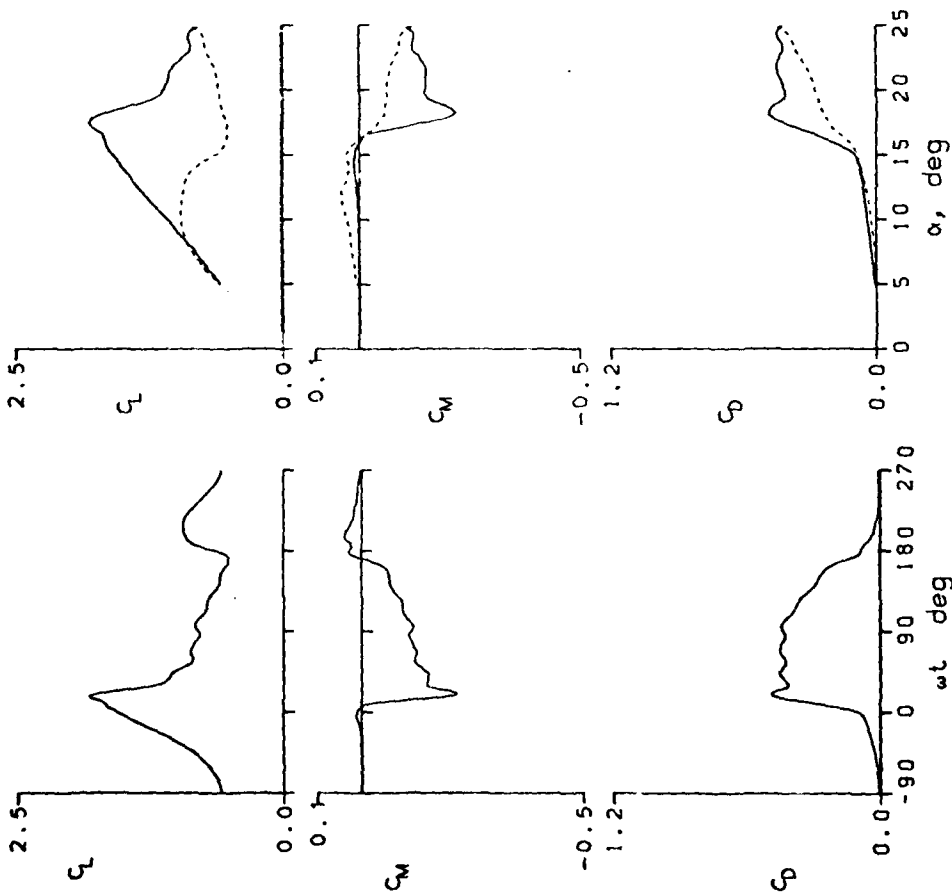


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 14220	A0 = 14.83°	k = 0.103
Re = 3.68 E6	A1 = 9.90°	M = 0.287
C _{Lmax} = 2.07	C _{Mmin} = -0.39	C _{Dmax} = 0.78
α _{Lmax} = 20.5°	ξ = 0.572	M _{max} = 1.219
α _{Cmin} = 14.4°	-C _{Dmax} = 10.0	α _{Mmax} = 15.6°

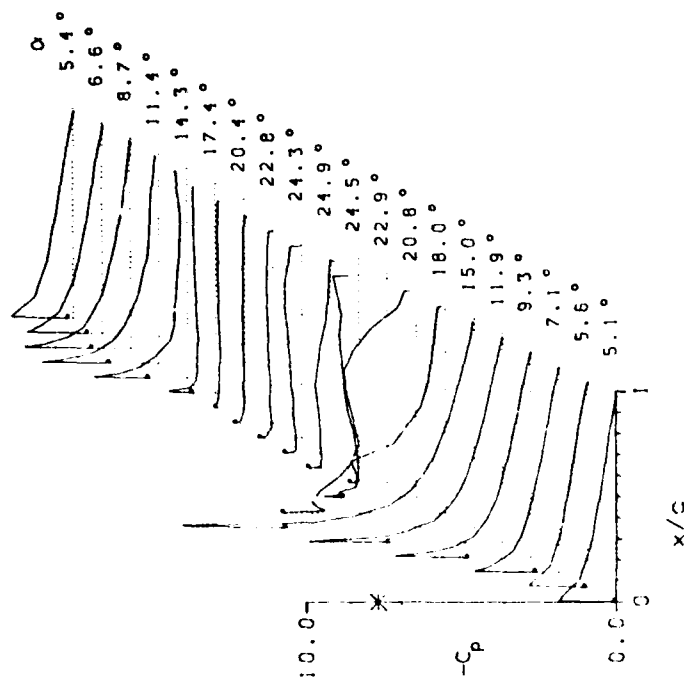
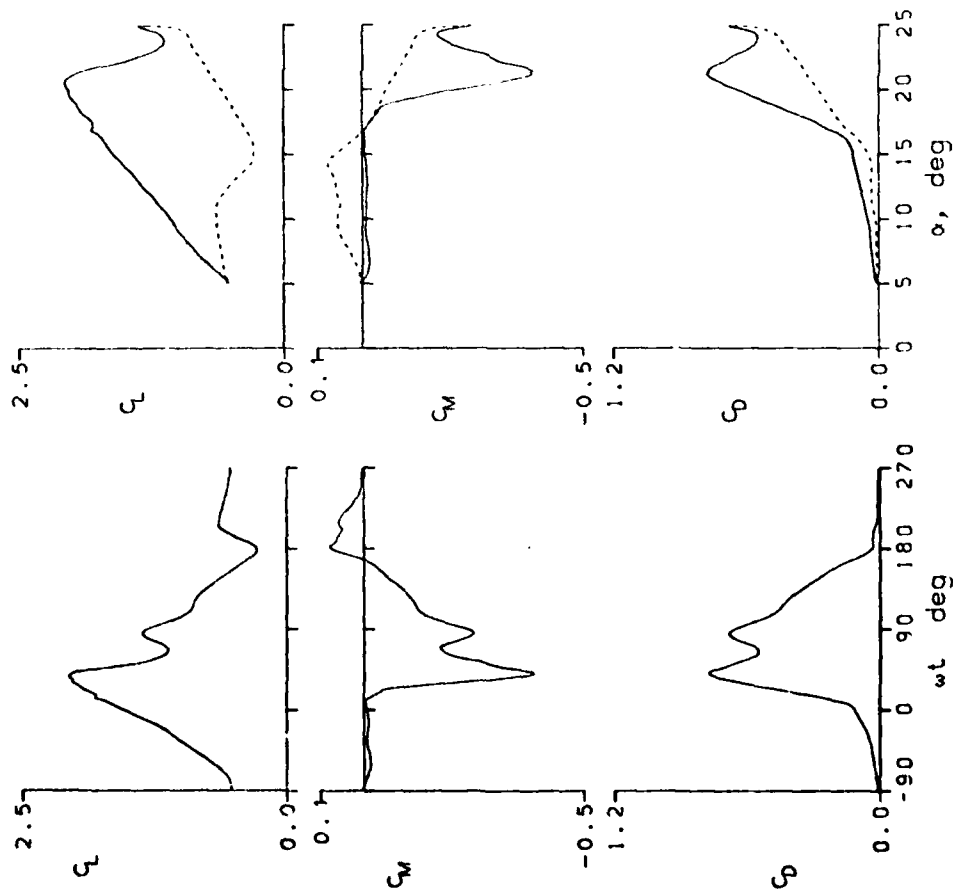


Figure 12.- Continued.

NACA 0012 AIRFOIL

FRAME : 15218	A0	= 14.78 °	k	= 0.099	
Re	= 3.68 E6	A1	= 9.94 °	M	= 0.290
C_{Lmax}	= 0.00	C_{Mmin}	= -0.01	C_{Dmax}	= 0.00
α_{Lmax}	= 24.7 °	ξ	= -0.001	M_{max}	= 0.090
α_{Cmin}	= 14.3 °	$-C_{Pmax}$	= -0.9	α_{Mmax}	= 24.4 °

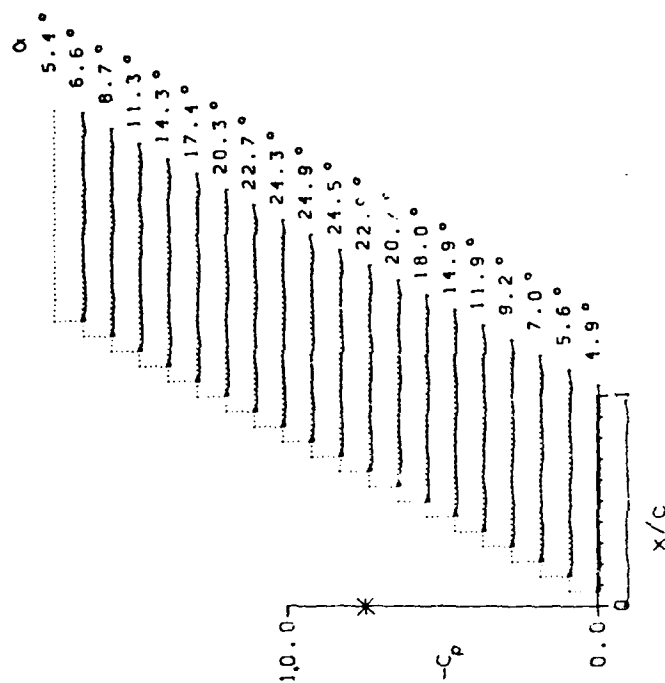
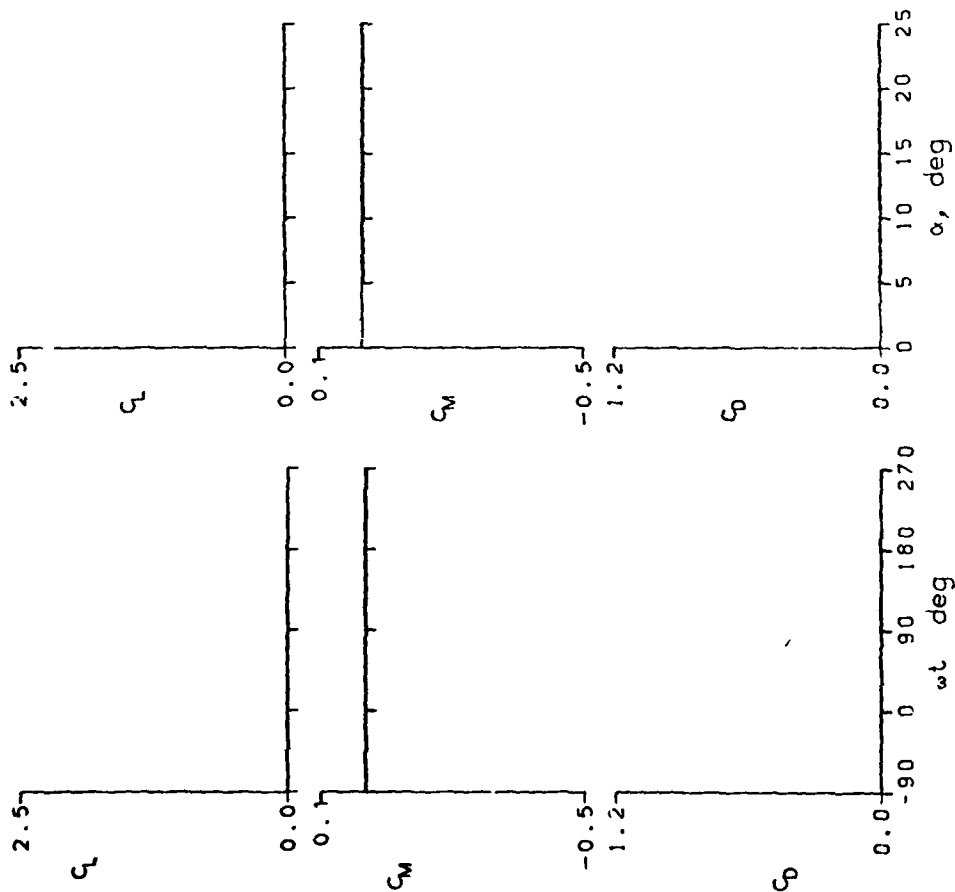


Figure 12.- Concluded.

AMES-01 AIRFOIL
 FRAME : 24022 $A_0 = 14.84^\circ$ $k = 0.025$
 $Re = 3.84 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.296$
 $C_{Lmax} = 1.81$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.41$
 $\alpha_{Lmax} = 17.2^\circ$ $\xi = 0.145$ $M_{max} = 1.262$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Dno} = 9.7$ $\alpha_{Mmax} = 16.2^\circ$

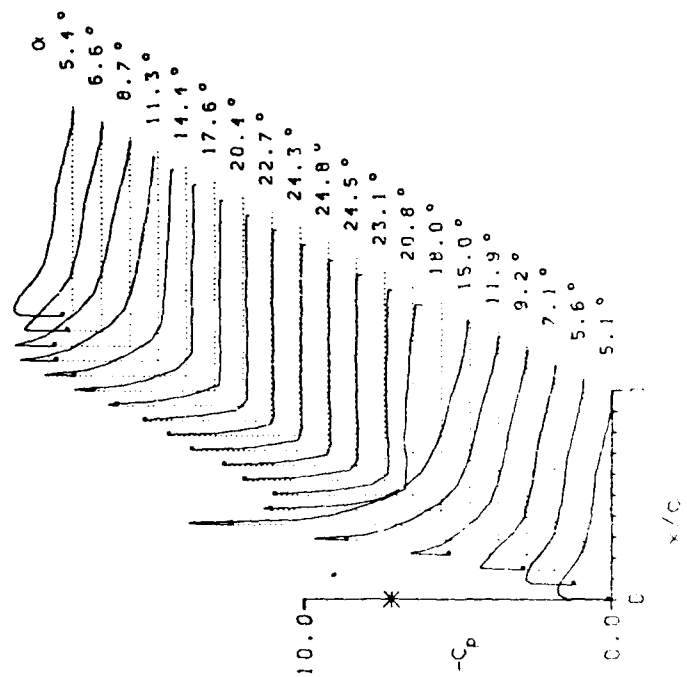
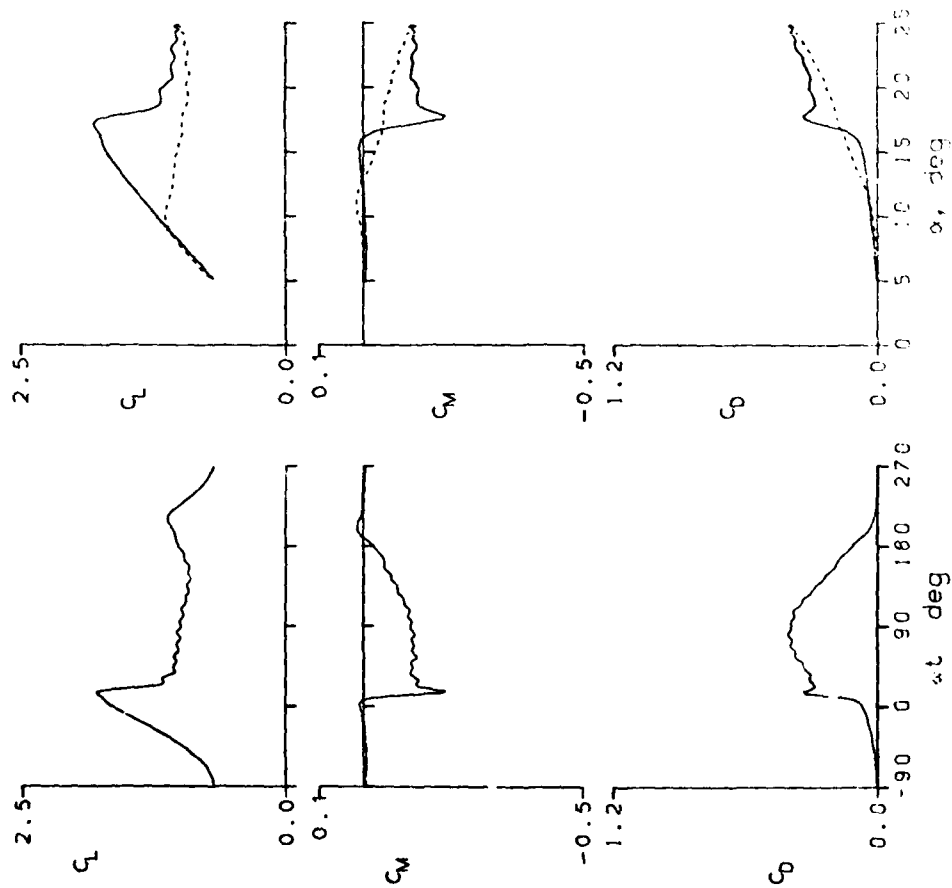


Figure 13.- Dynamic data for Ames A-01 airfoil.

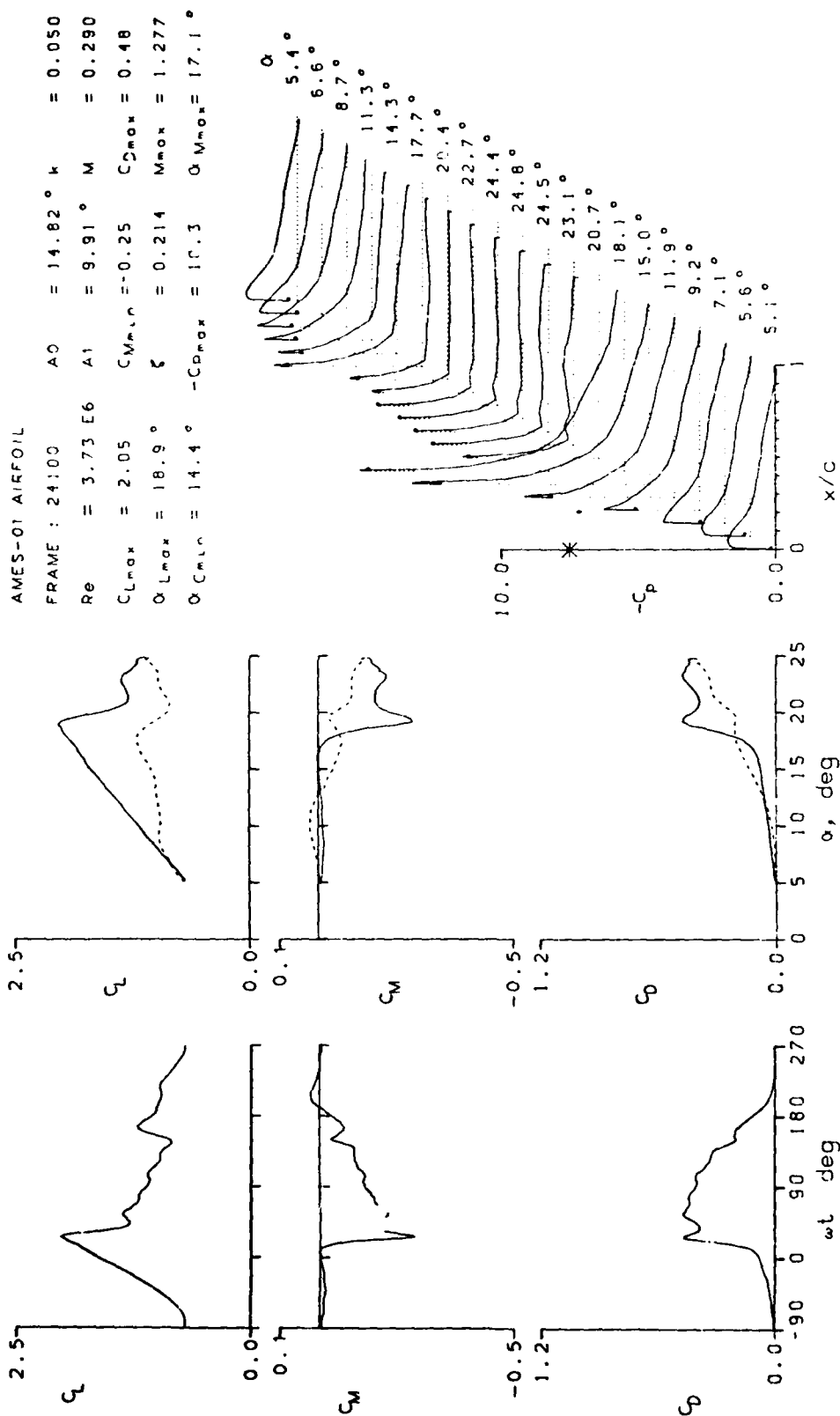


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 24105	$A_0 = 14.83^\circ$	$k = 0.100$
$Re = 3.71 \text{ E}6$	$\Lambda_1 = 9.88^\circ$	$M = 0.289$
$C_{Lmax} = 2.31$	$C_{Mmin} = -0.39$	$C_{Dmax} = 0.76$
$\alpha_{Lmax} = 21.3^\circ$	$\xi = 0.497$	$M_{max} = 1.283$
$\alpha_{Cmin} = 14.5^\circ$	$-C_{Pmax} = 10.4$	$\alpha_{Mmax} = 17.8^\circ$

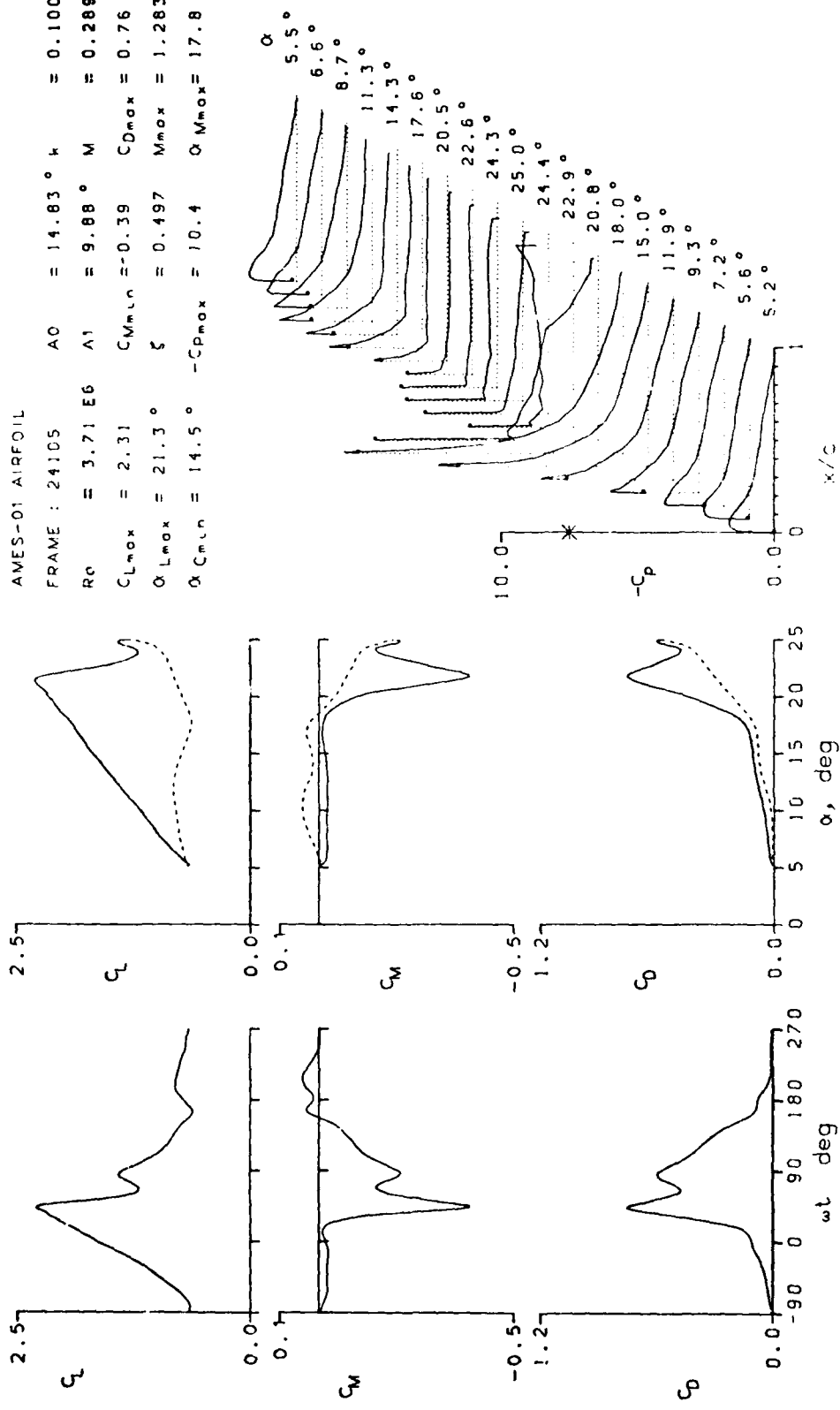


Figure 13.- Continued.

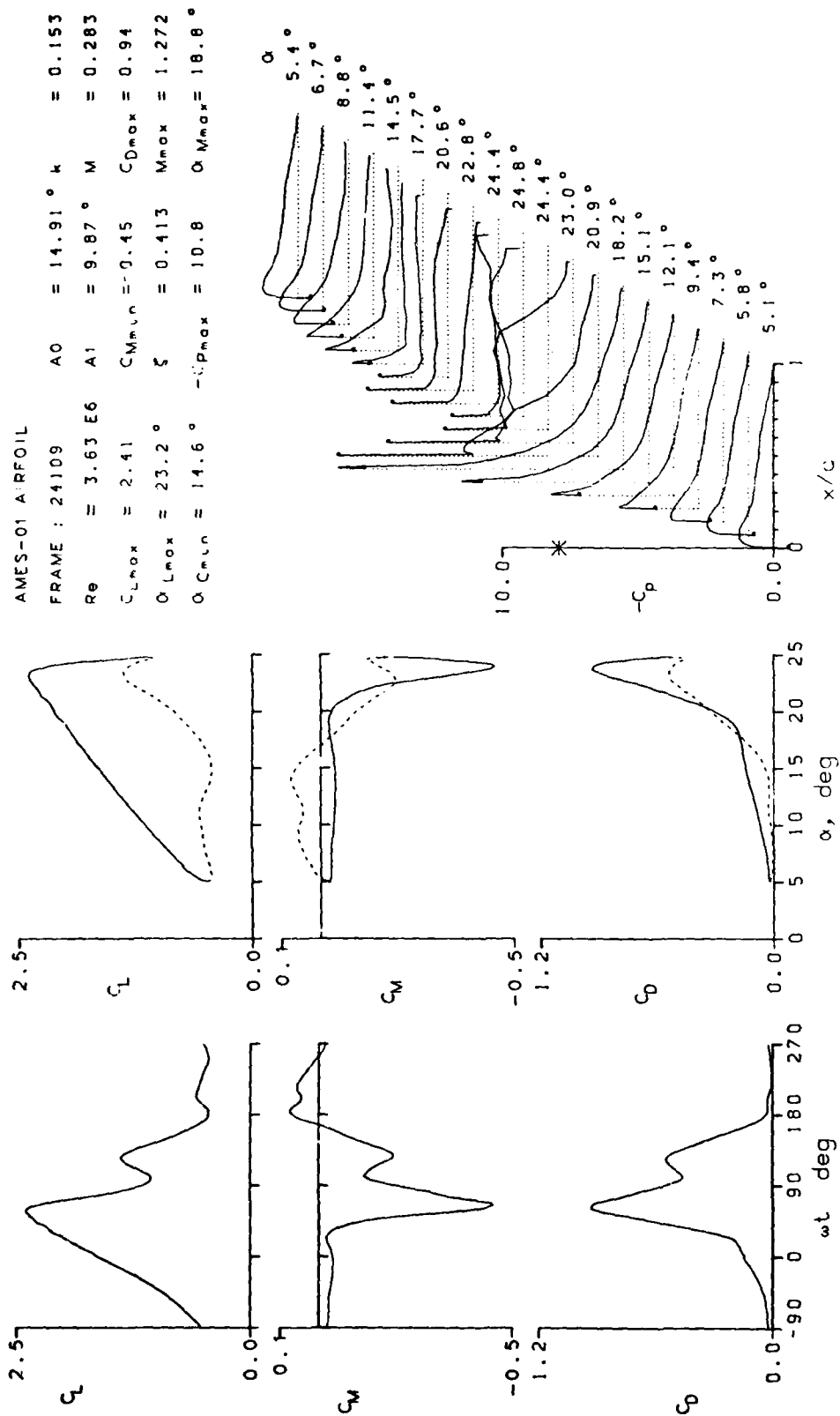


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 24117	A0 = 14.83°	k = 0.098
Re = 3.60 E6	A1 = 9.87°	M = 0.280
C _{Lmax} = 2.40	C _{Mmin} = -0.41	C _{Dmax} = 0.80
α _{Lmax} = 21.8°	ξ = 0.453	M _{max} = 1.261
α _{Cmin} = 14.5°	-C _{pmax} = 10.9	α _{Mmax} = 18.3°

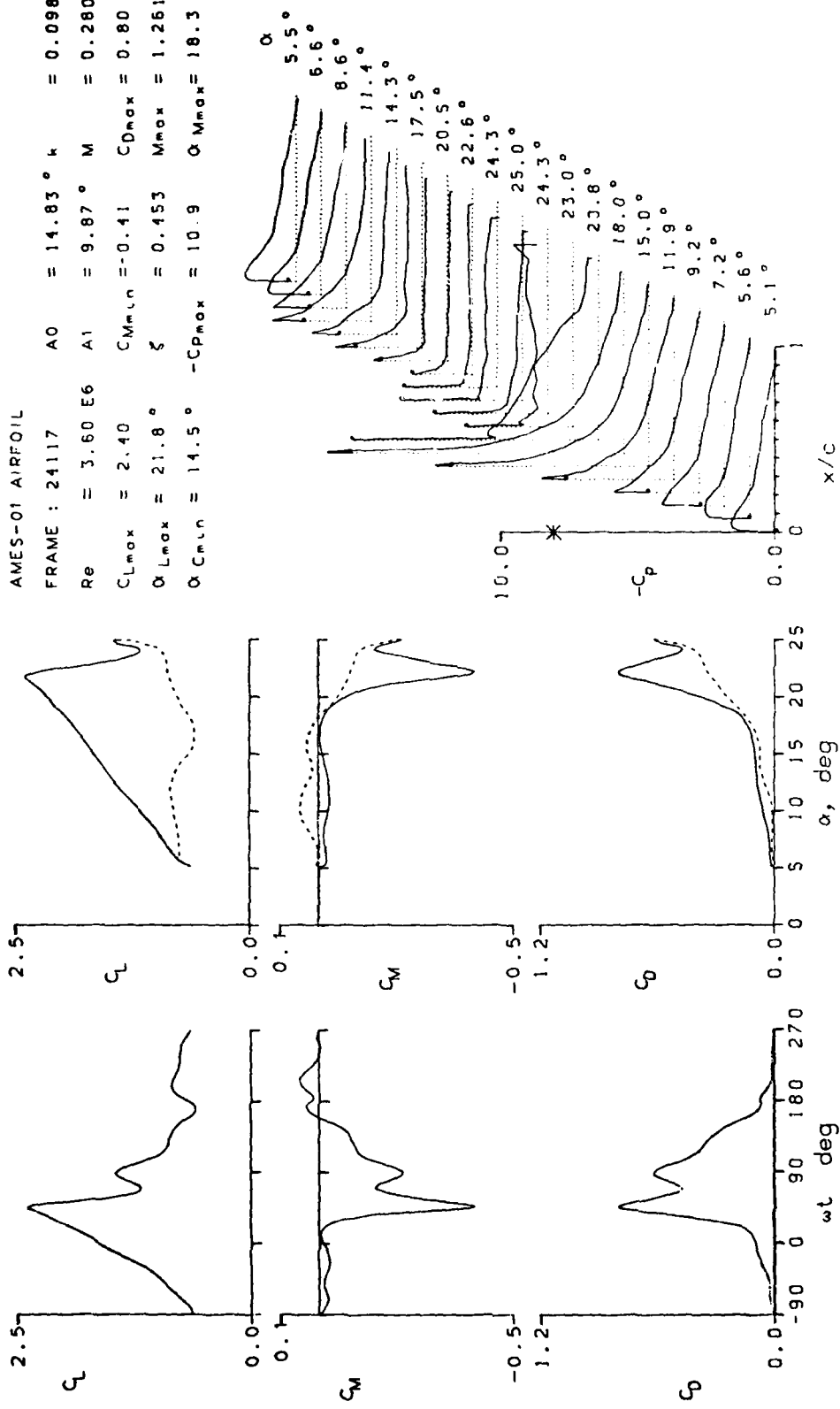


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 24201	A0 = 14.83°	k = 0.099
Re = 3.21 E6	A1 = 9.88°	M = 0.248
CLmax = 2.48	CMmin = -0.39	CDmax = 0.85
αLmax = 22.5°	ξ = 0.395	Mmax = 1.222
αCMmin = 14.4°	-CDmax = 13.5	αMmax = 20.4°

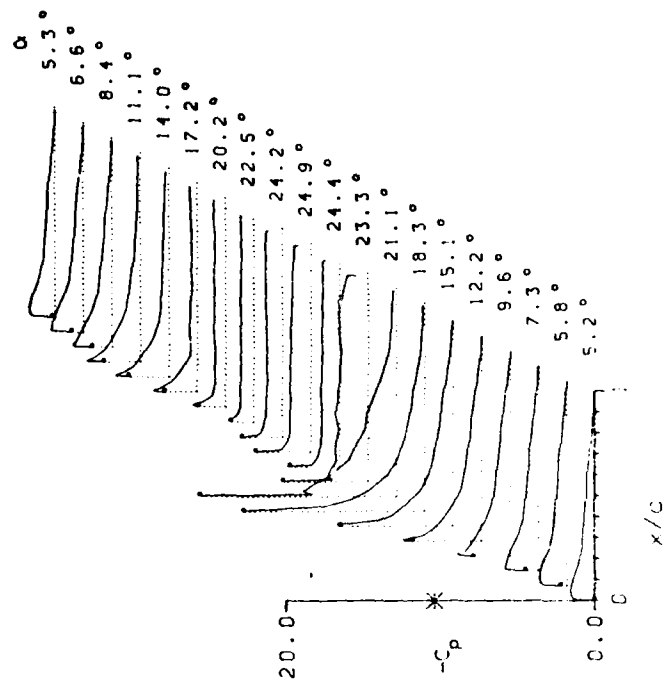
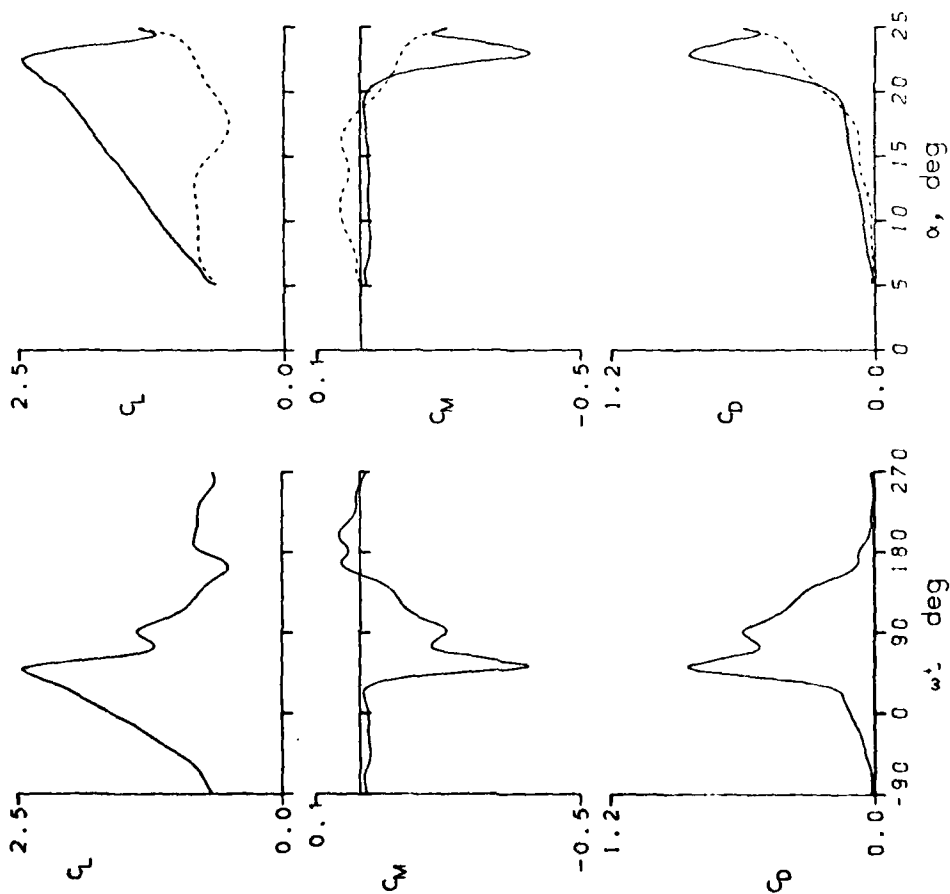


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 24209	A0 = 14.81°	k = 0.098
Re = 2.85 E6	A1 = 9.88°	M = 0.220
CLmax = 2.49	CMmin = -0.38	CDmax = 0.86
αLmax = 23.3°	ξ = 0.281	Mmax = 1.157
αCmin = 14.4°	-CPmax = 16.3	αMmax = 21.5°

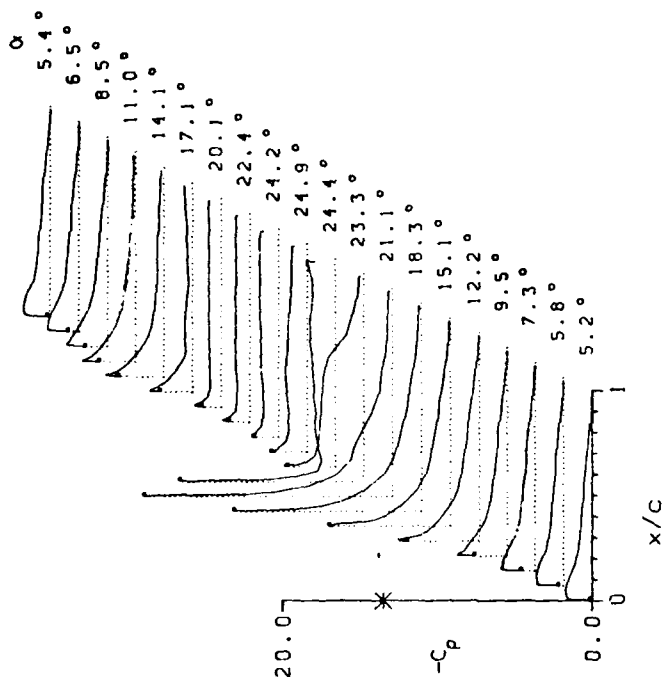
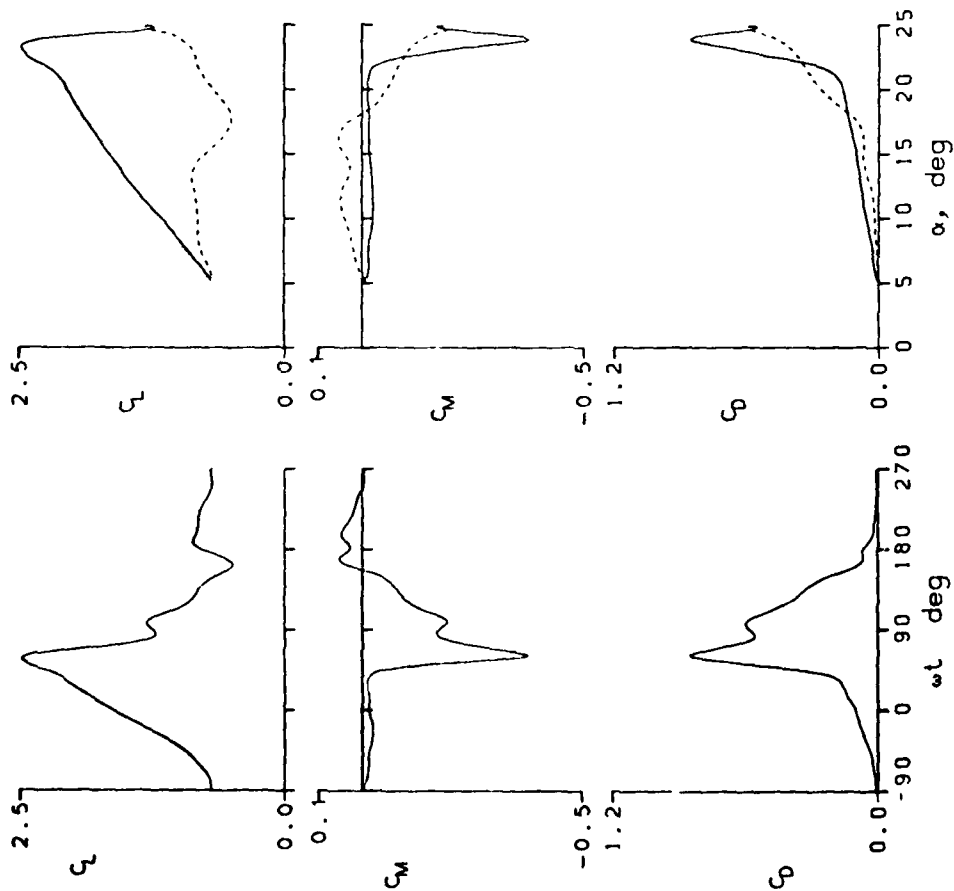


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 24217 $A_0 = 14.80^\circ$ $k = 0.099$
 $Re = 2.40 \text{ E}6$ $A_1 = 9.93^\circ$ $M = 0.184$
 $C_{Lmax} = 2.64$ $C_{Mmin} = -0.37$ $C_{Dmax} = 0.90$
 $\alpha_{Lmax} = 23.8^\circ$ $\xi = 0.189$ $M_{max} = 0.936$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 17.7$ $\alpha_{Mmax} = 22.5^\circ$

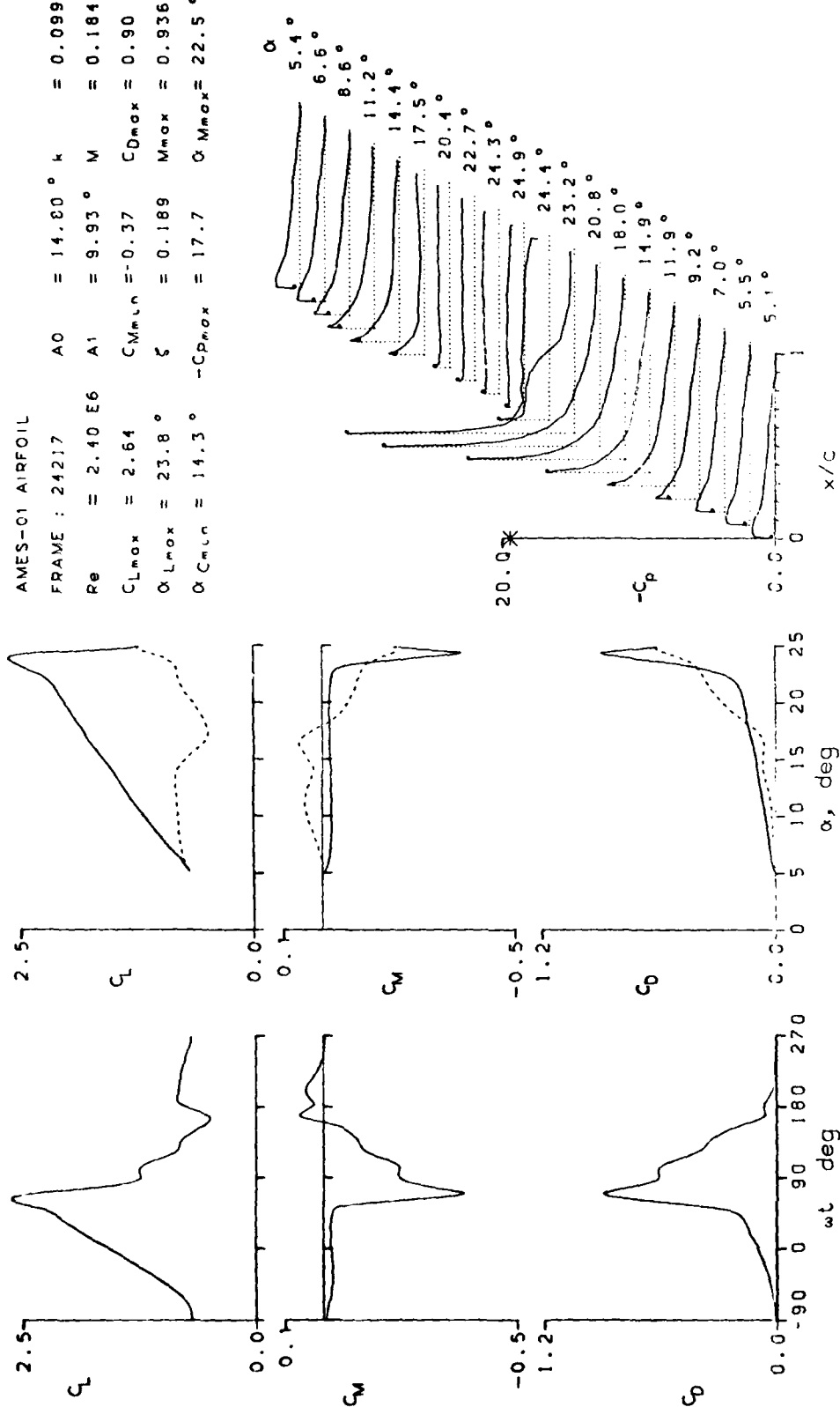


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 24302	A0 = 7.26°	k = 0.049
Re = 2.40 E6	A1 = 10.01°	M = 0.184
C _{Lmax} = 1.76	C _{Mmin} = -0.05	C _{Dmax} = 0.14
α _{Lmax} = 17.2°	ξ = 0.059	M _{max} = 0.713
α _{Cmin} = 6.7°	-C _{Dmax} = 11.4	α _{Mmax} = 17.5°

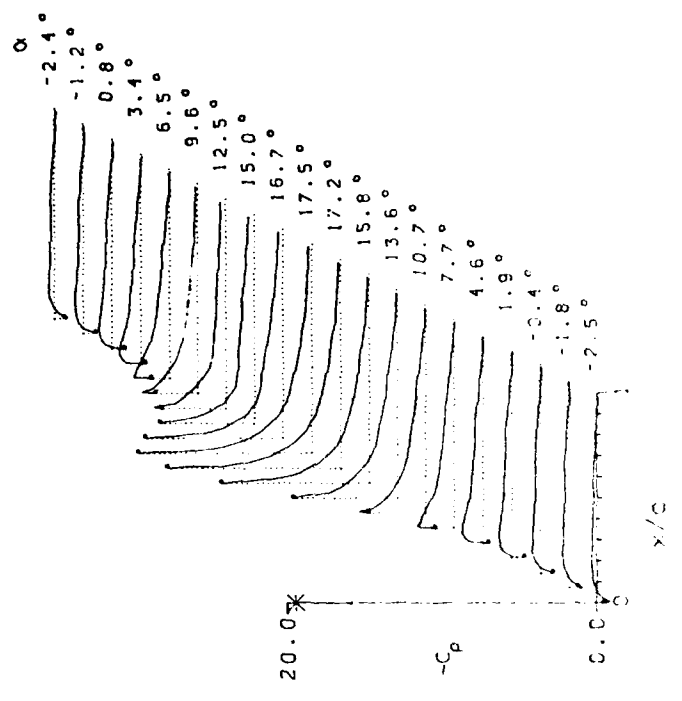
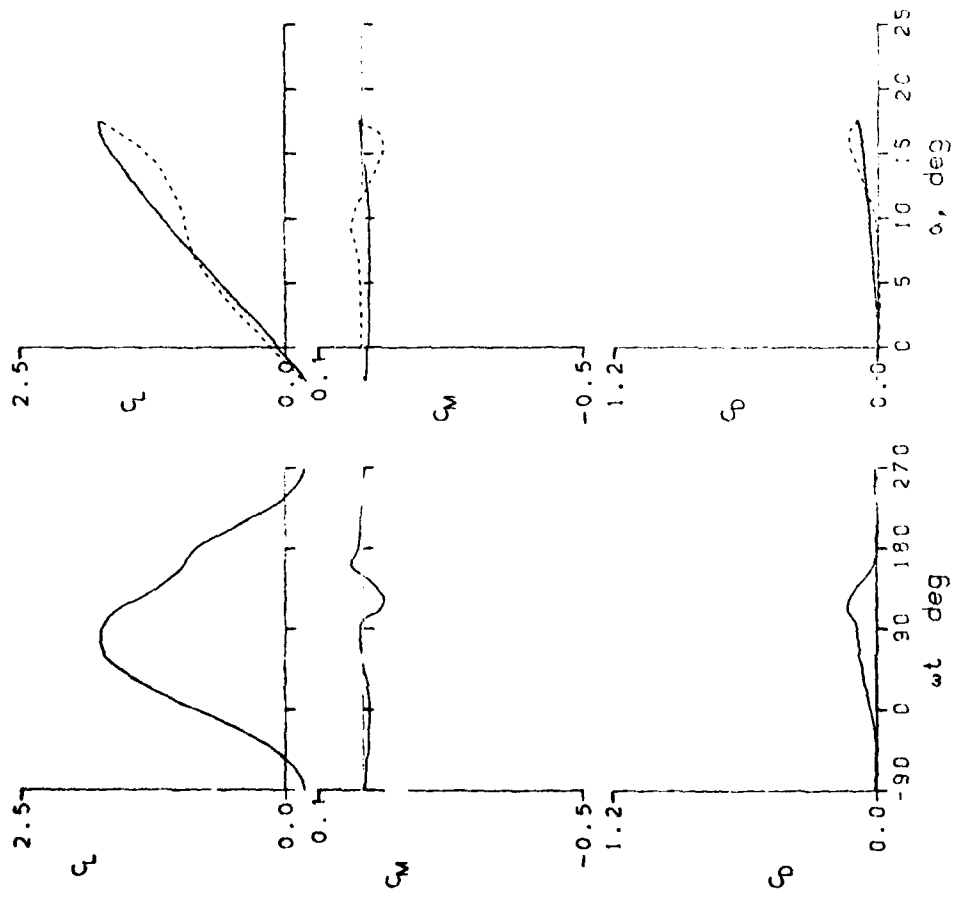


Figure 13.- Cont inued.

AMES-01 AIRFOIL

FRAME : 24306	A0 = 7.28°	k = 0.197
Re = 2.39 E6	A1 = 10.01°	M = 0.184
CLmax = 1.81	CMmin = -0.06	CDmax = 0.13
αLmax = 17.4°	ξ = 0.591	Mmax = 0.729
αCMmin = 6.7°	-CPmax = 11.8	αMmax = 17.4°

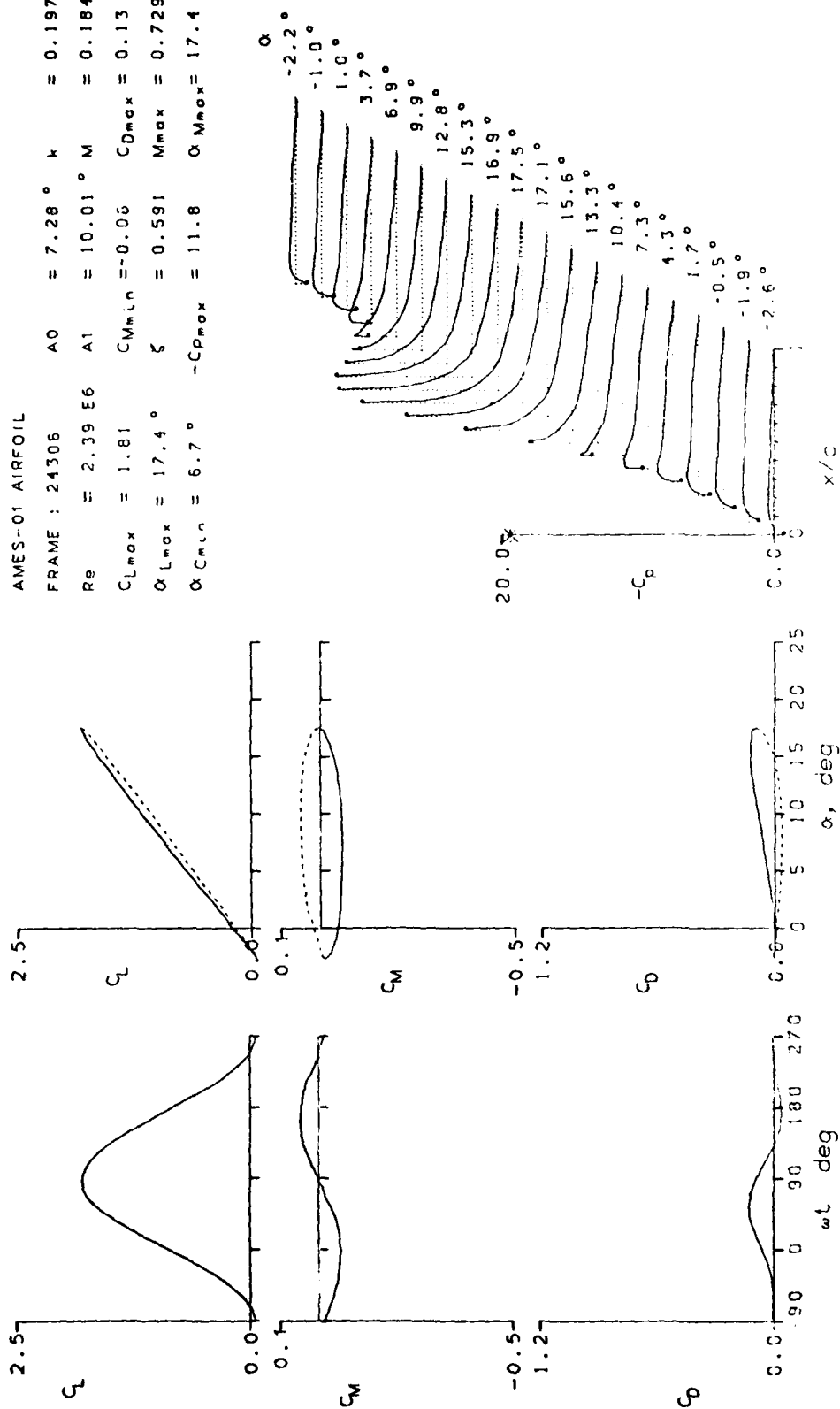


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 24314 $A_0 = 14.82^\circ$ $k = 0.099$
 $Re = 1.50 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.110$
 $C_{Lmax} = 2.65$ $C_{Mmin} = -0.44$ $C_{Dmax} = 1.04$
 $\alpha_{Lmax} = 23.6^\circ$ $\zeta = 0.133$ $M_{max} = 0.488$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 16.9$ $\alpha_{Mmax} = 22.4^\circ$

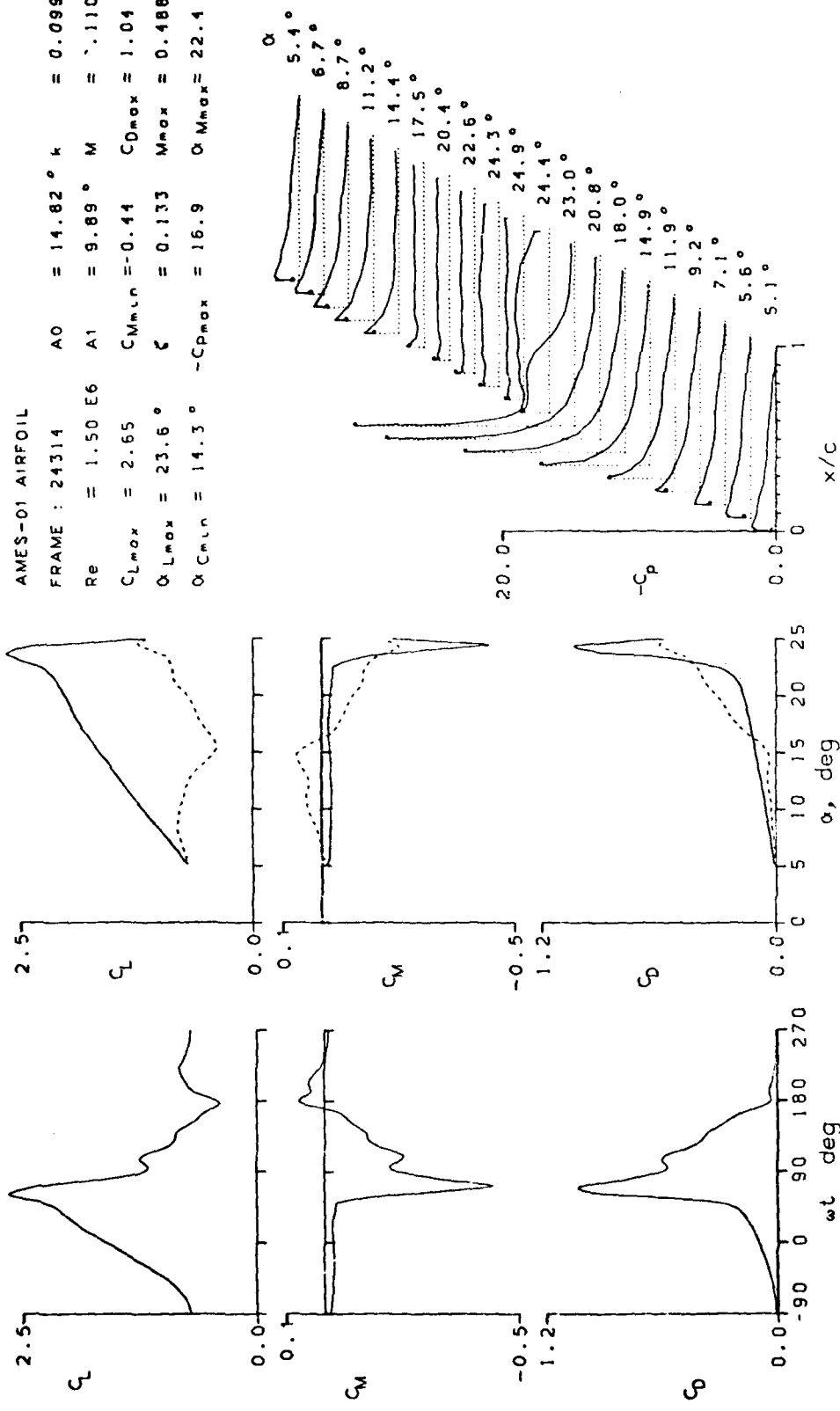


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 24323 $A_0 = 14.81^\circ$ $k = 0.099$
 $Re = 0.99 E6$ $A_1 = 9.91^\circ$ $M = 0.073$
 $C_{Lmax} = 2.57$ $C_{Mmin} = -0.40$ $C_{Dmax} = 1.00$
 $\alpha_{Lmax} = 23.0^\circ$ $\xi = 0.227$ $M_{max} = 0.300$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 15.4$ $\alpha_{Mmax} = 21.7^\circ$

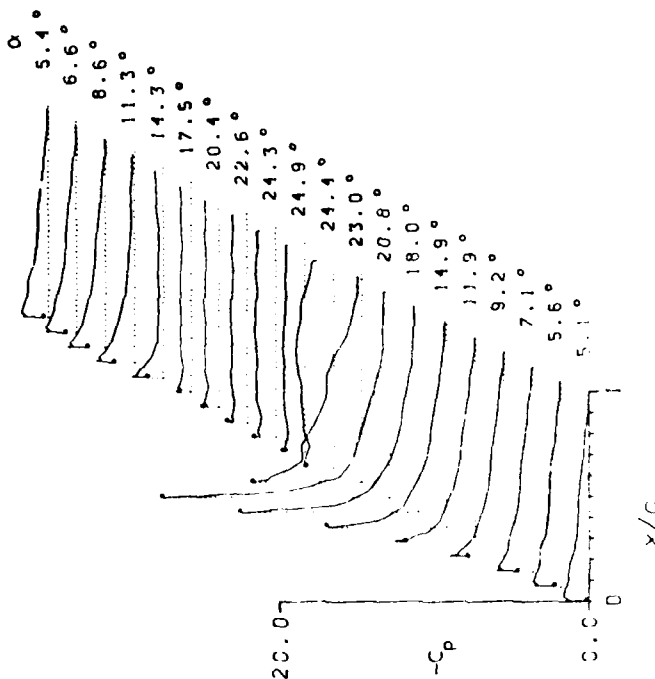
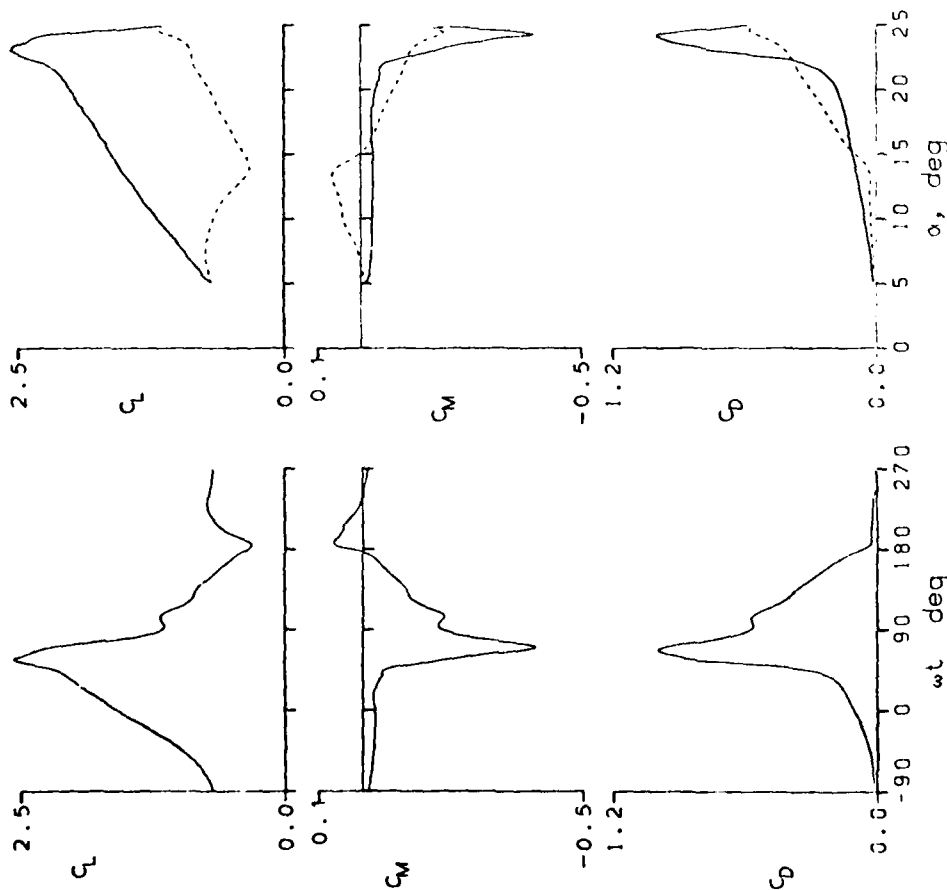


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25022 $A_0 = 9.79^\circ$ $k = 0.025$
 $Re = 3.84 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.79$ $C_{Mmin} = -0.18$ $C_{Dmax} = 0.34$
 $\alpha_{Lmax} = 16.6^\circ$ $\zeta = 0.069$ $M_{max} = 1.296$
 $\alpha_{Cmin} = 2.3^\circ$ $-C_{Dmax} = 9.6$ $\alpha_{Mmax} = 15.8^\circ$

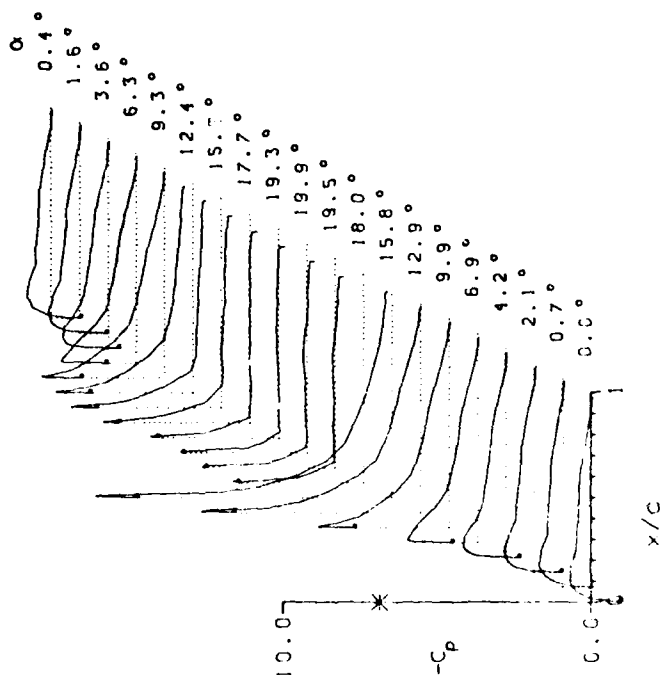
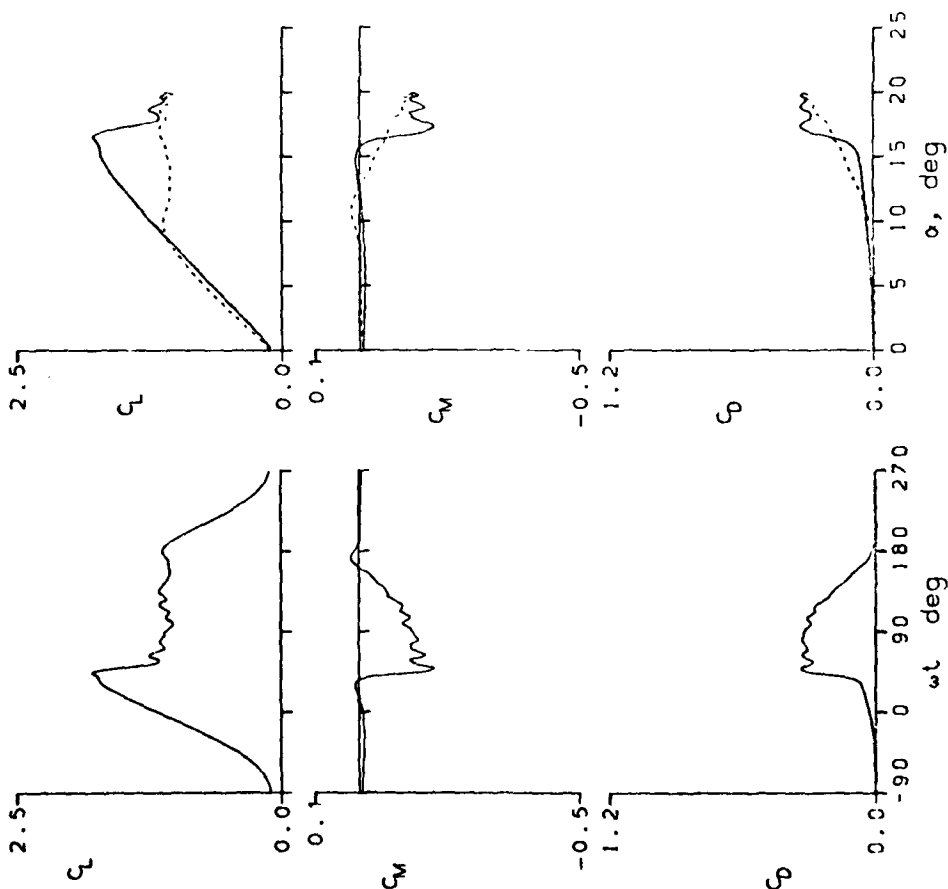


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAVE : 25102 $A_0 = 9.79^\circ$ $k = 0.049$
 $Re = 3.83 \text{ E} 6$ $A_1 = 9.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.96$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.36$
 $\alpha_{Lmax} = 17.5^\circ$ $\xi = 0.083$ $M_{max} = 1.326$
 $\alpha_{Cmin} = 9.2^\circ$ $-C_{Dmax} = 9.9$ $\alpha_{Mmax} = 16.4^\circ$

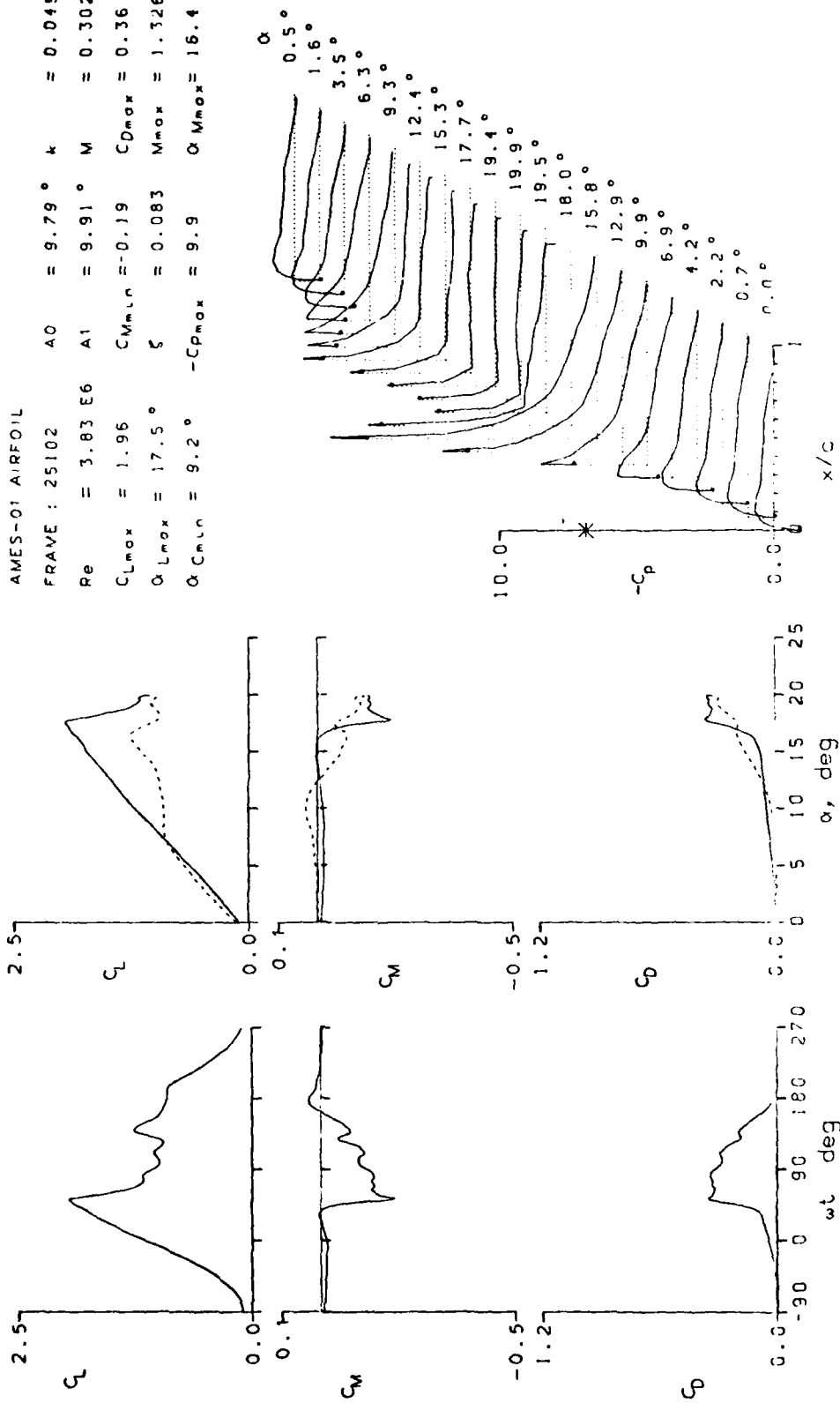


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25104	A0 = 9.80 °	k = 0.098
Re = 3.82 E6	A1 = 9.88 °	M = 0.302
C _{Lmax} = 2.11	C _{Mmin} = -0.30	C _{Dmax} = 0.52
α _{Lmax} = 18.8 °	ξ = 0.258	M _∞ x = 1.333
α _{Cmin} = 9.3 °	-C _{Dmax} = 9.9	α _{Mmax} = 16.6 °

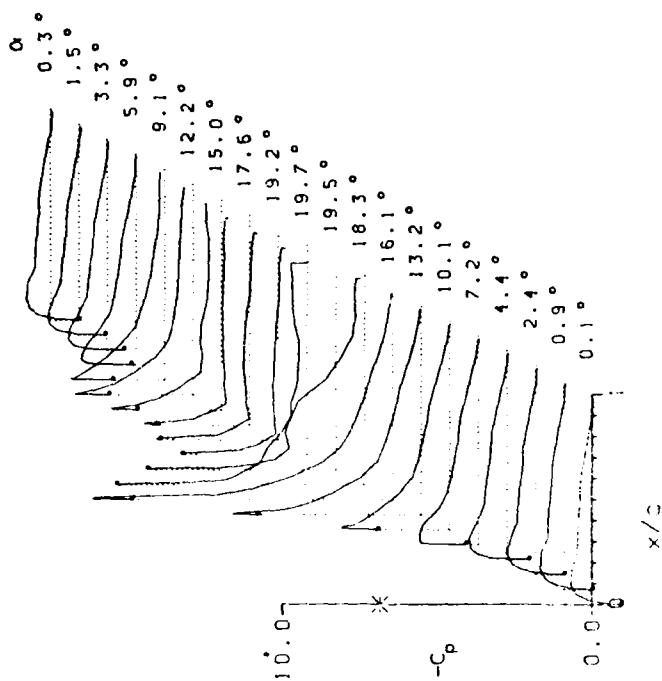
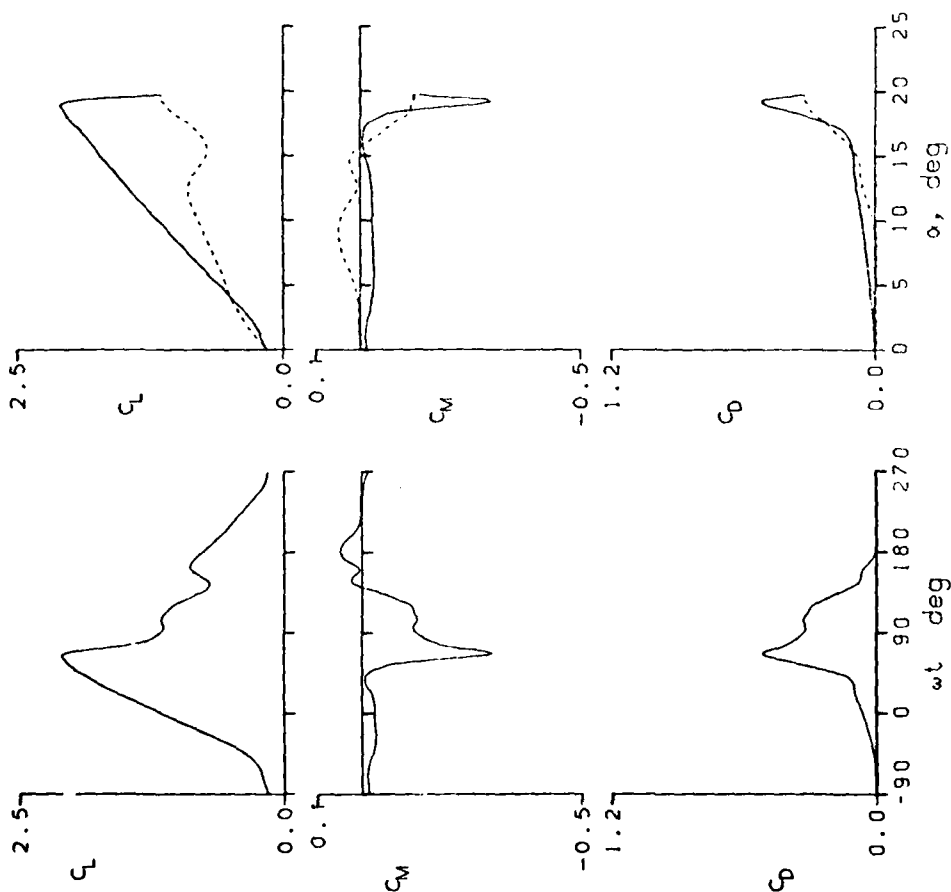


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25109	A0 = 9.92°	k = 0.147
Re = 3.81 E6	A1 = 9.91°	M = 0.302
C _{Lmax} = 2.19	C _{Mmin} = -0.36	C _{Dmax} = 0.61
α _{Lmax} = 19.7°	ξ = 0.263	M _{max} = 1.348
α _{Cmin} = 9.4°	-C _{pmax} = 10.1	α _{Mmax} = 17.5°

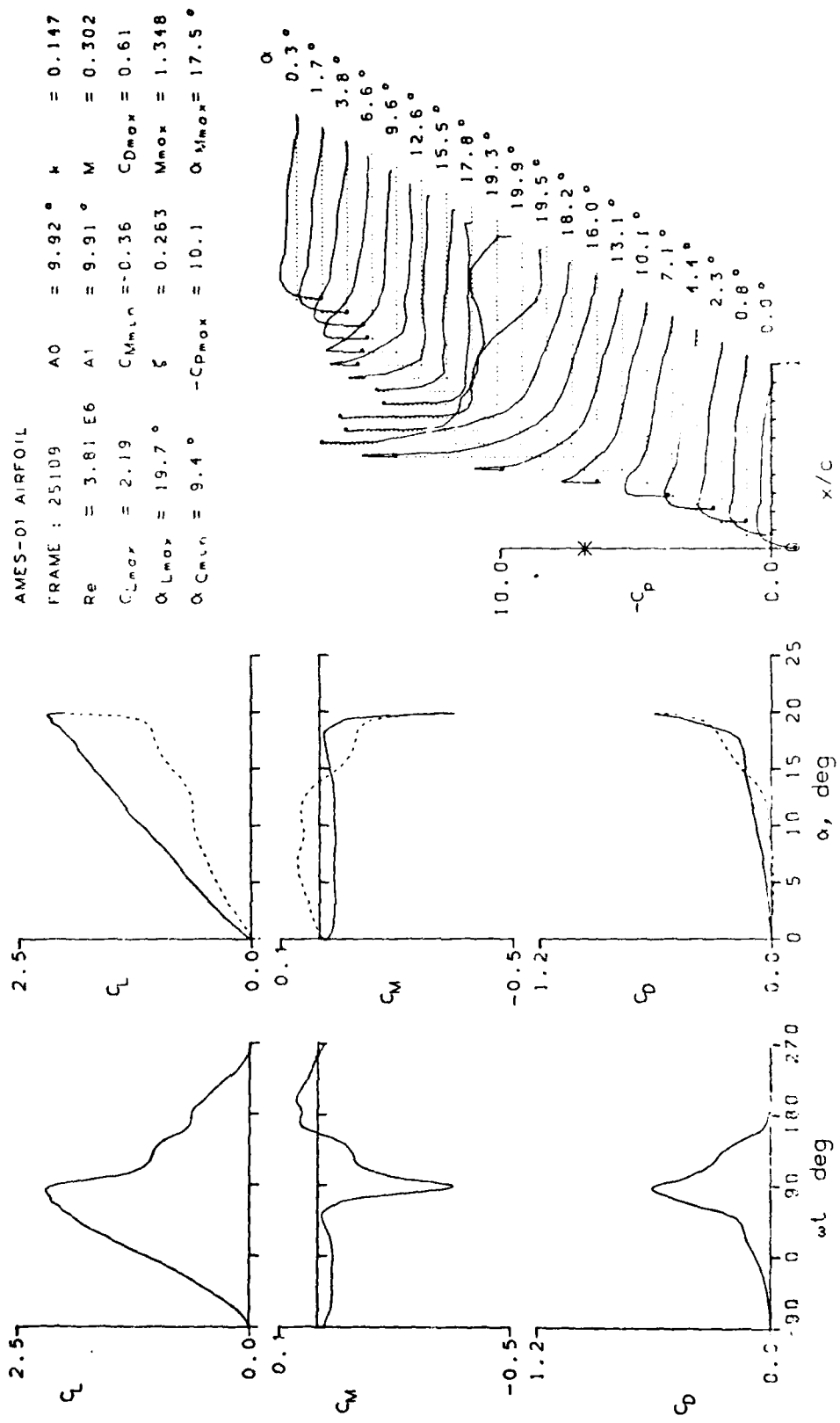


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25117	A0 = 9.94 °	k = 0.024
Re = 3.83 E6	A1 = 4.90 °	M = 0.303
$C_{Lmax} = 1.62$	$C_{Mmin} = -0.04$	$C_{Dmax} = 0.11$
$\alpha_{Lmax} = 14.5 °$	$\xi = -0.055$	$M_{max} = 1.203$
$\alpha_{Cmin} = 9.8 °$	$-C_{Dmax} = 8.8$	$\alpha_{Mmax} = 14.7 °$

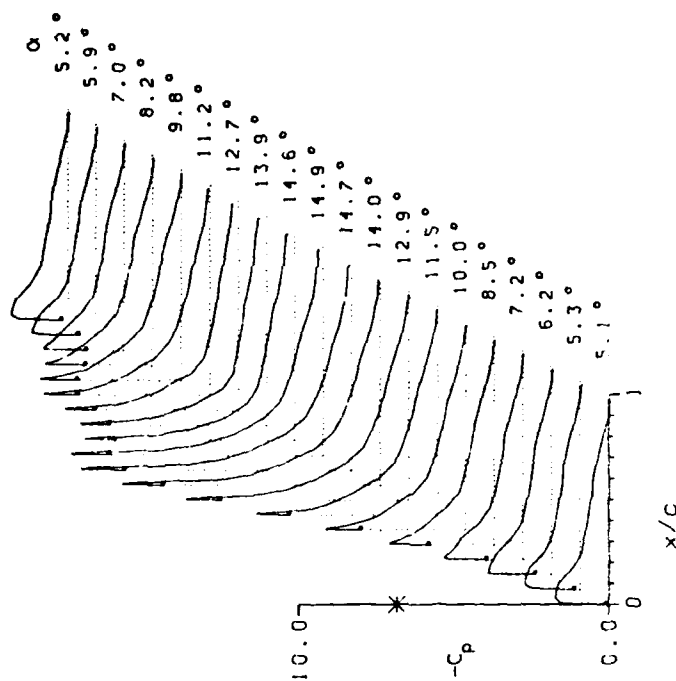
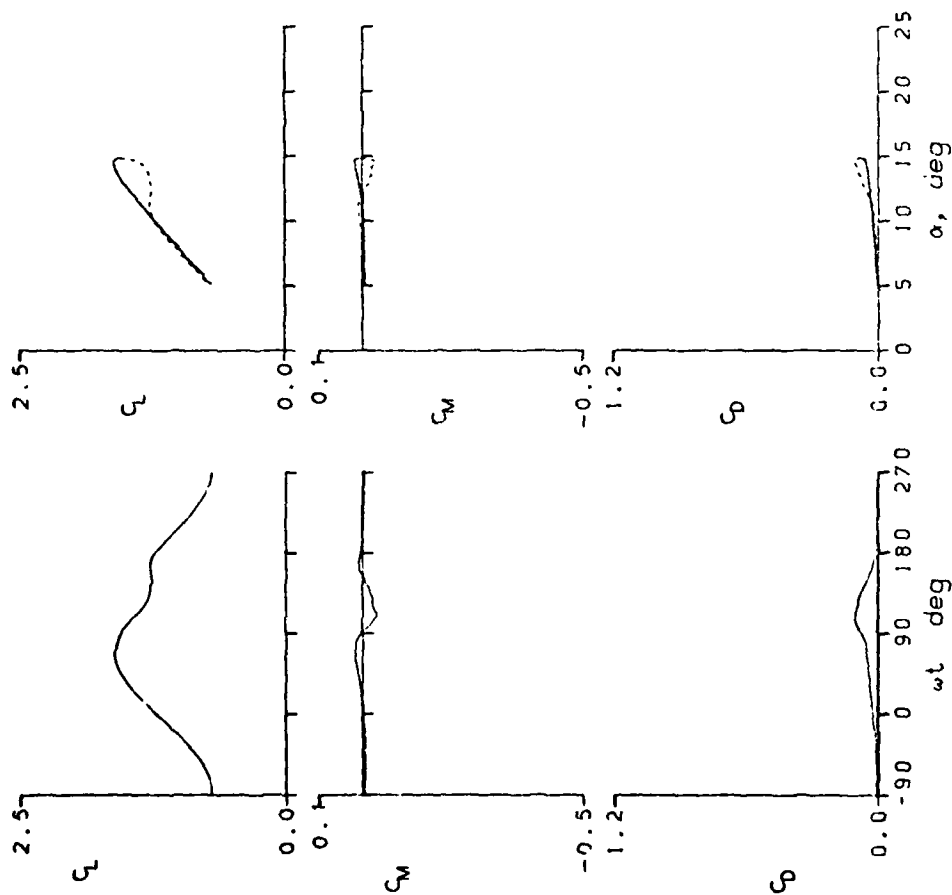


Figure 13.- Cont inued.

AMES-01 AIRFOIL

FRAME : 25118	$A_0 = 9.93^\circ$	$\mu = 0.049$
$Re = 3.80 \times 10^6$	$A_1 = 4.90^\circ$	$M = 0.302$
$C_{Lmax} = 1.65$	$C_{Mmin} = -0.02$	$C_{Dmax} = 0.08$
$\alpha_{Lmax} = 14.6^\circ$	$\xi = 0.072$	$M_{max} = 1.223$
$\alpha_{C_{min}} = 9.8^\circ$	$-C_{pmax} = 9.0$	$\alpha_{Mmax} = 14.7^\circ$

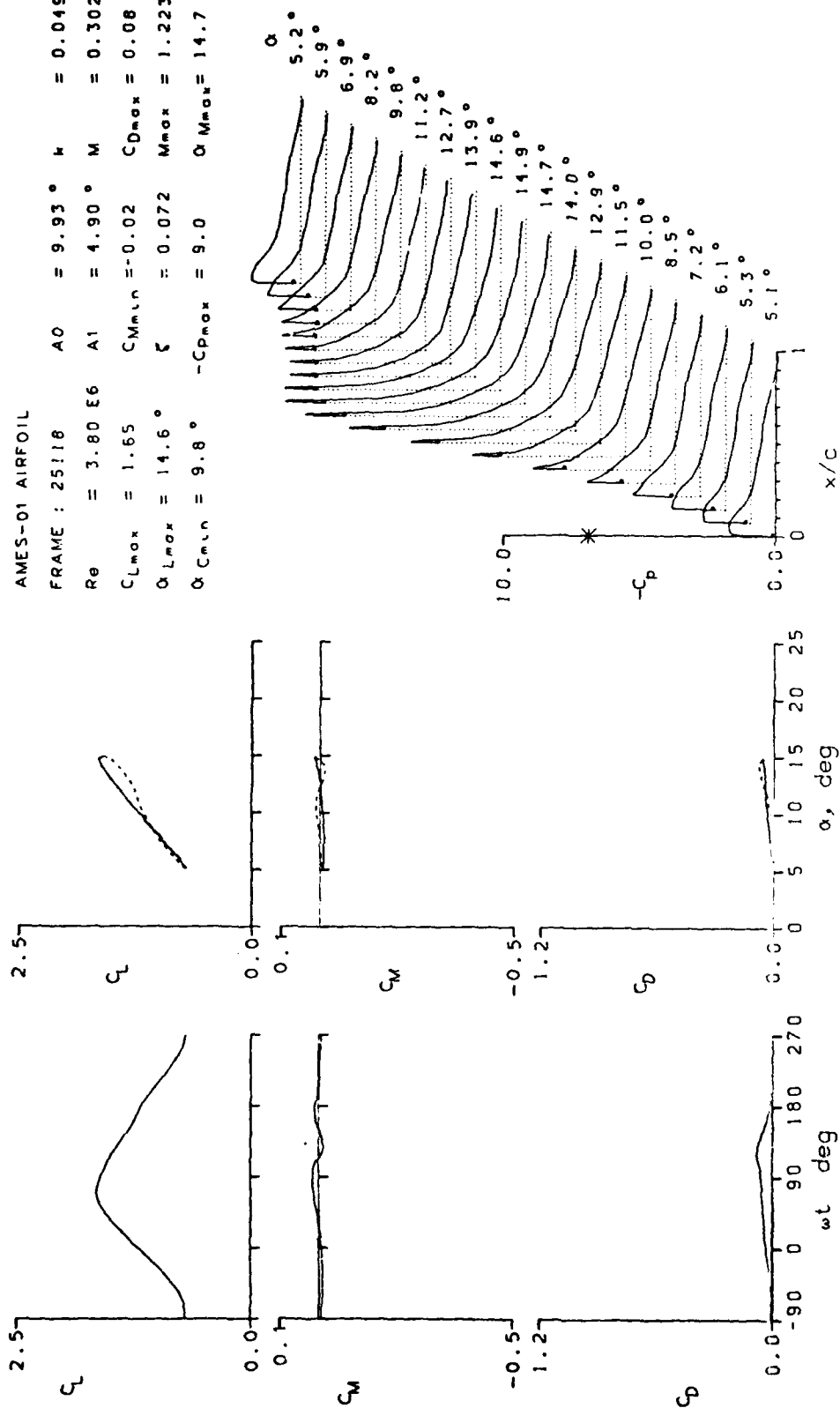


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25119 $A_0 = 9.93^\circ$ $k = 0.097$
 $Re = 3.81 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.303$
 $C_{L_{max}} = 1.70$ $C_{M_{min}} = -0.02$ $C_{D_{max}} = 0.07$
 $\alpha_{L_{max}} = 14.8^\circ$ $\xi = 0.235$ $M_{max} = 1.265$
 $\alpha_{C_{M_{min}}} = 9.8^\circ$ $-C_{D_{max}} = 9.3$ $\alpha_{M_{max}} = 14.9^\circ$

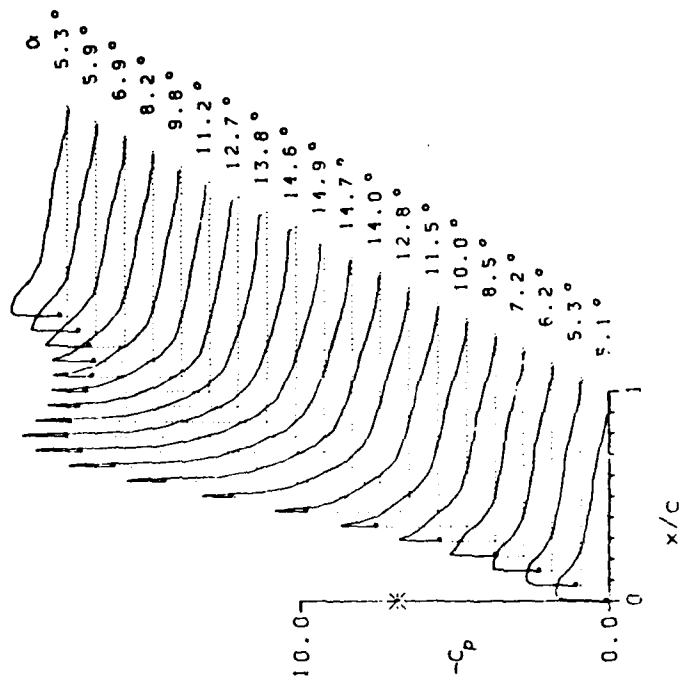
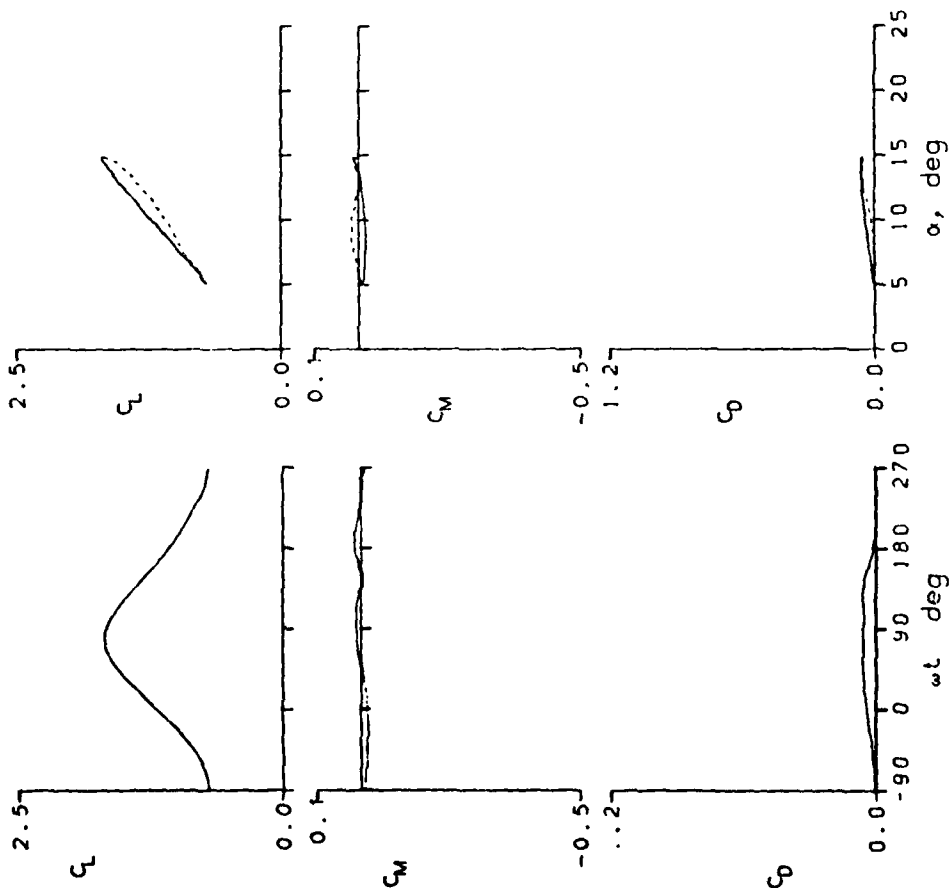


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25121 A0 = 9.94° h = 0.147
 Re = 3.81 E6 A1 = 4.90° M = 0.302
 C_{Lmax} = 1.72 C_{Mmin} = -0.03 C_{Dmax} = 0.07
 α_{Lmax} = 14.9° ζ = 0.407 M_{max} = 1.293
 α_{Cmin} = 9.8° -C_{Dmax} = 9.6 α_{Mmax} = 14.9°

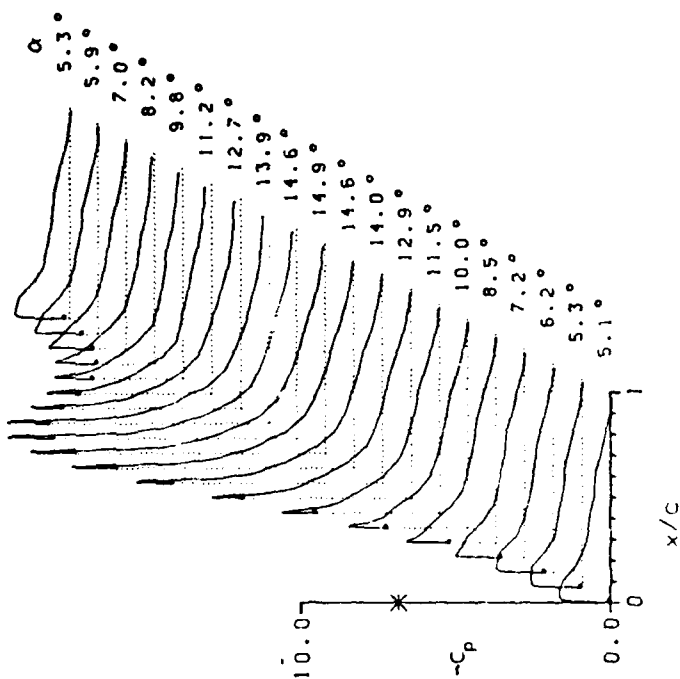
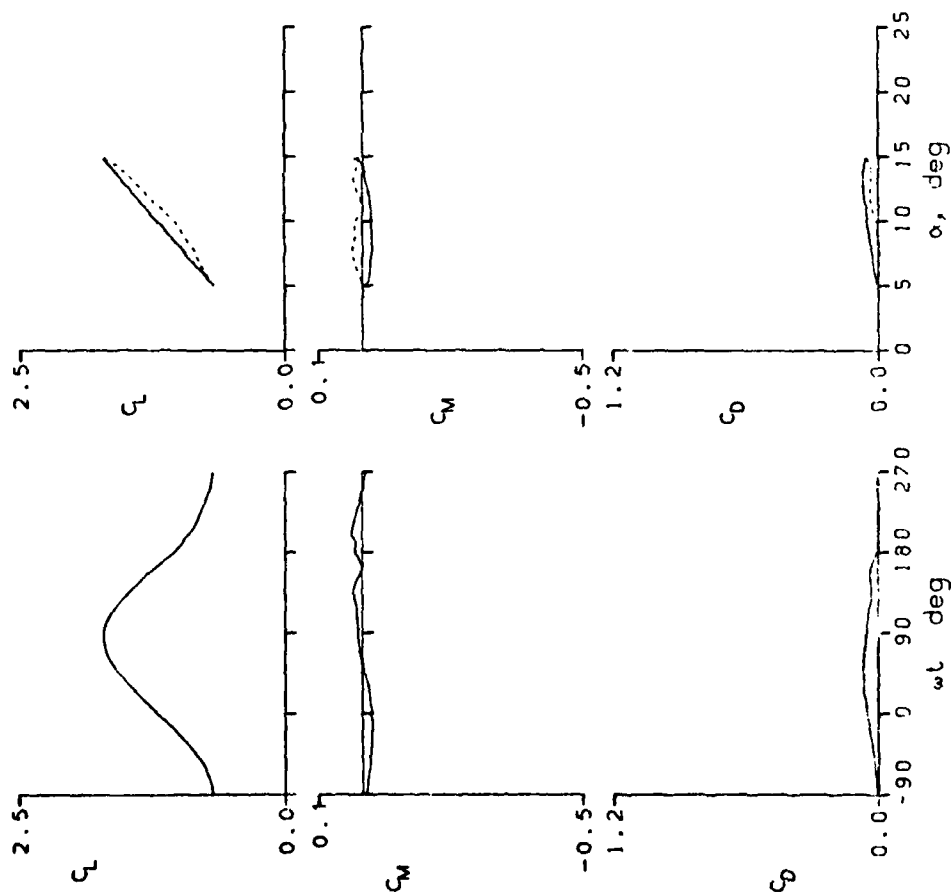


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25122	A0 = 9.94 °	k = 0.146
Re = 3.82 E6	A1 = 4.91 °	M = 0.303
C _{Lmax} = 1.73	C _{Mmin} = -0.03	C _{Dmax} = 0.07
α _{Lmax} = 14.9 °	ξ = 0.406	M _{max} = 1.300
α _{Cmin} = 9.8 °	-C _{Dmax} = 9.6	α _{Mmax} = 14.9 °

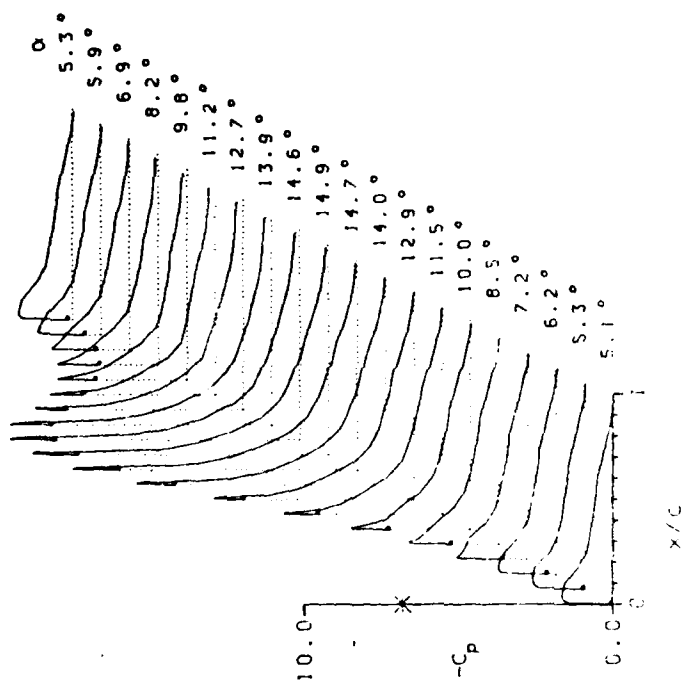
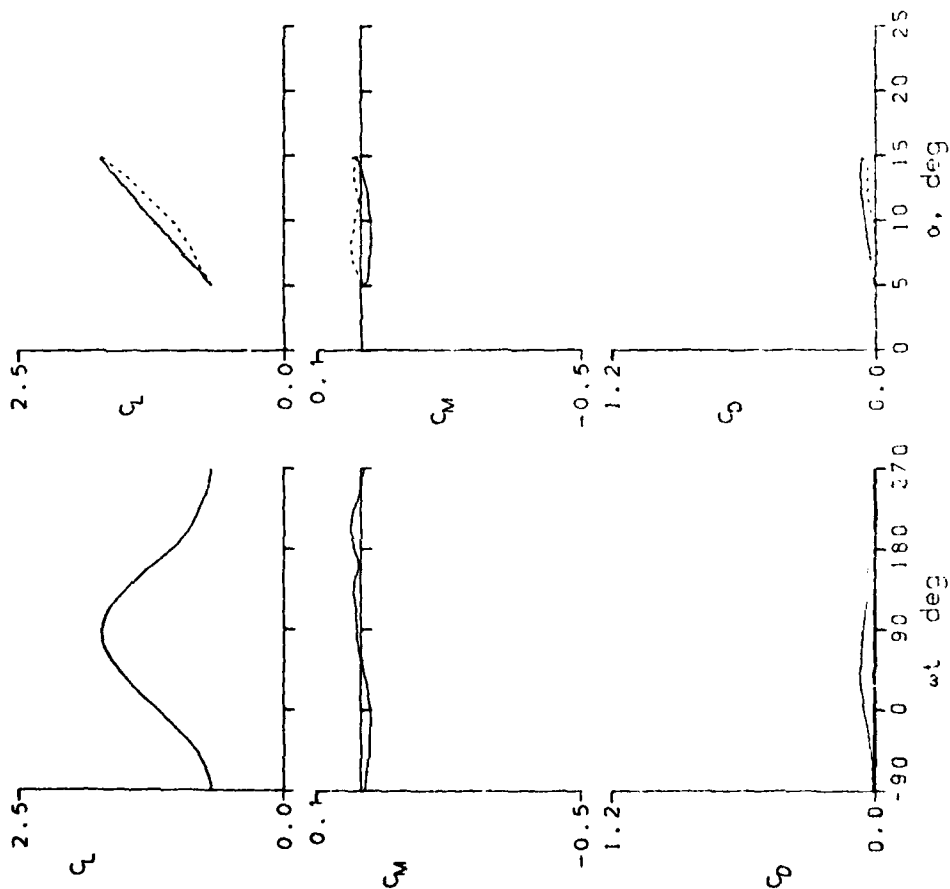


Figure 13.- Continued.

AMES-01 A RFOIL
 FRAME : 25123 $A_0 = 9.92^\circ$ $k = 0.195$
 $Re = 3.82 \times 10^6$ $A_1 = 4.90^\circ$ $M = 0.303$
 $C_{Lmax} = 1.77$ $C_{Mmin} = -0.04$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 14.9^\circ$ $\zeta = 0.364$ $M_{max} = 1.326$
 $\alpha_{C_{min}} = 9.8^\circ$ $-C_{pmax} = 9.8$ $\alpha_{Mmax} = 14.9^\circ$

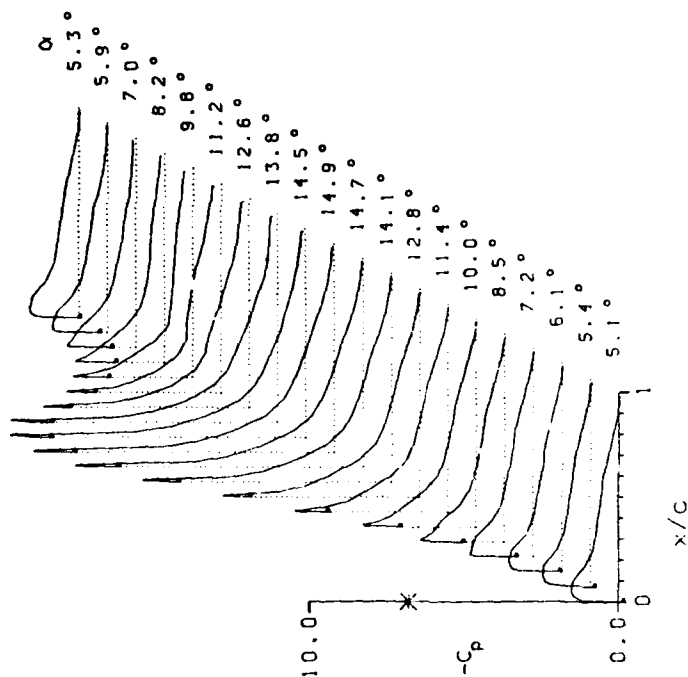
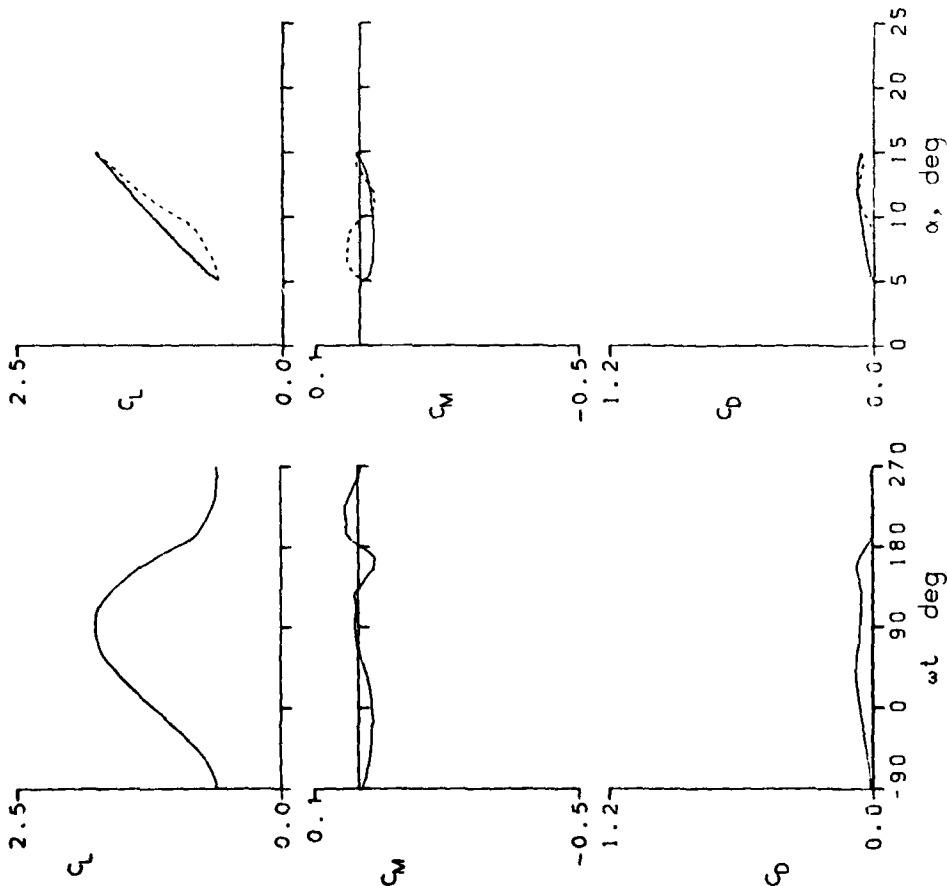


Figure 13.- Continued.

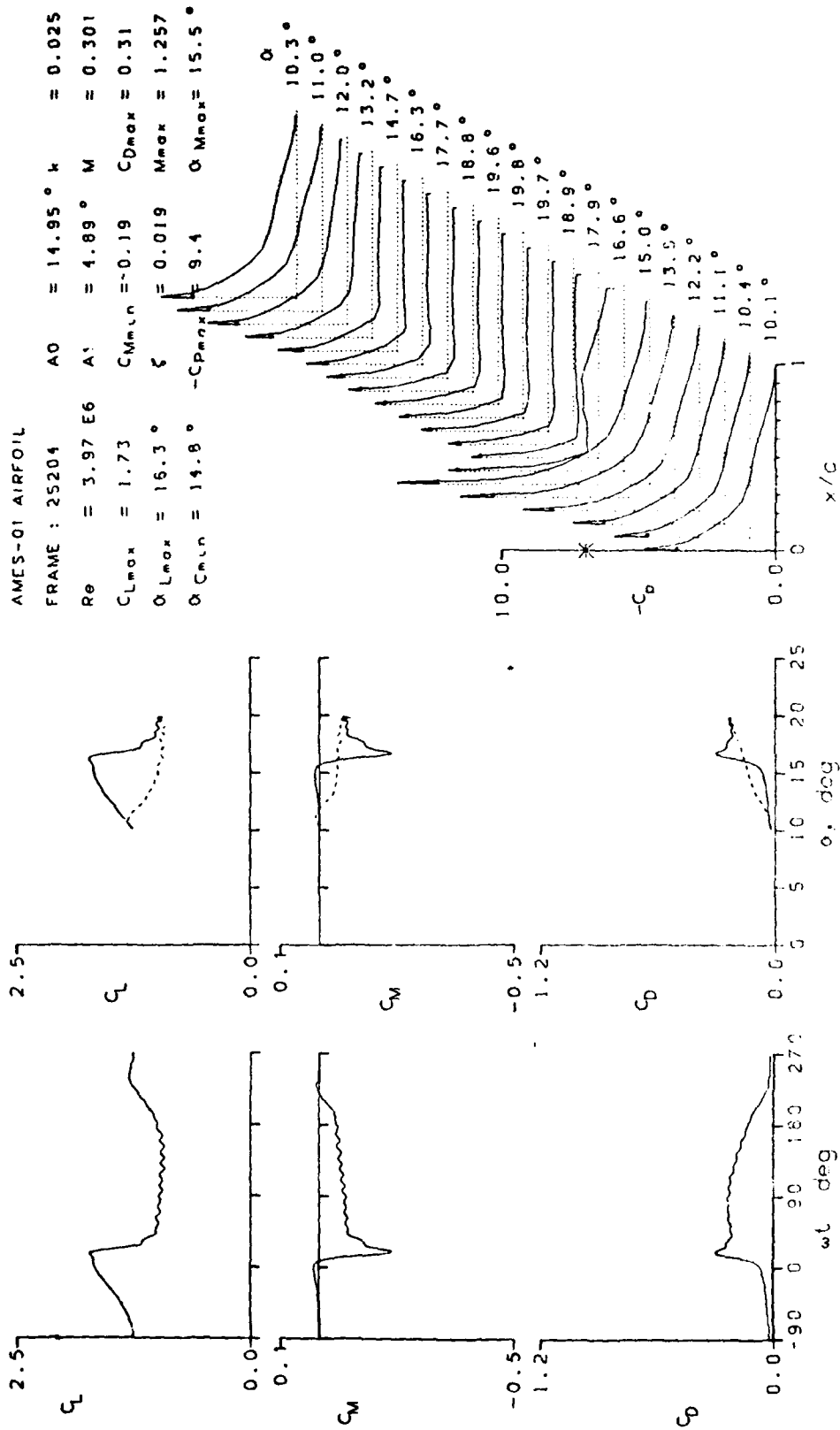


Figure 13.- Continued.

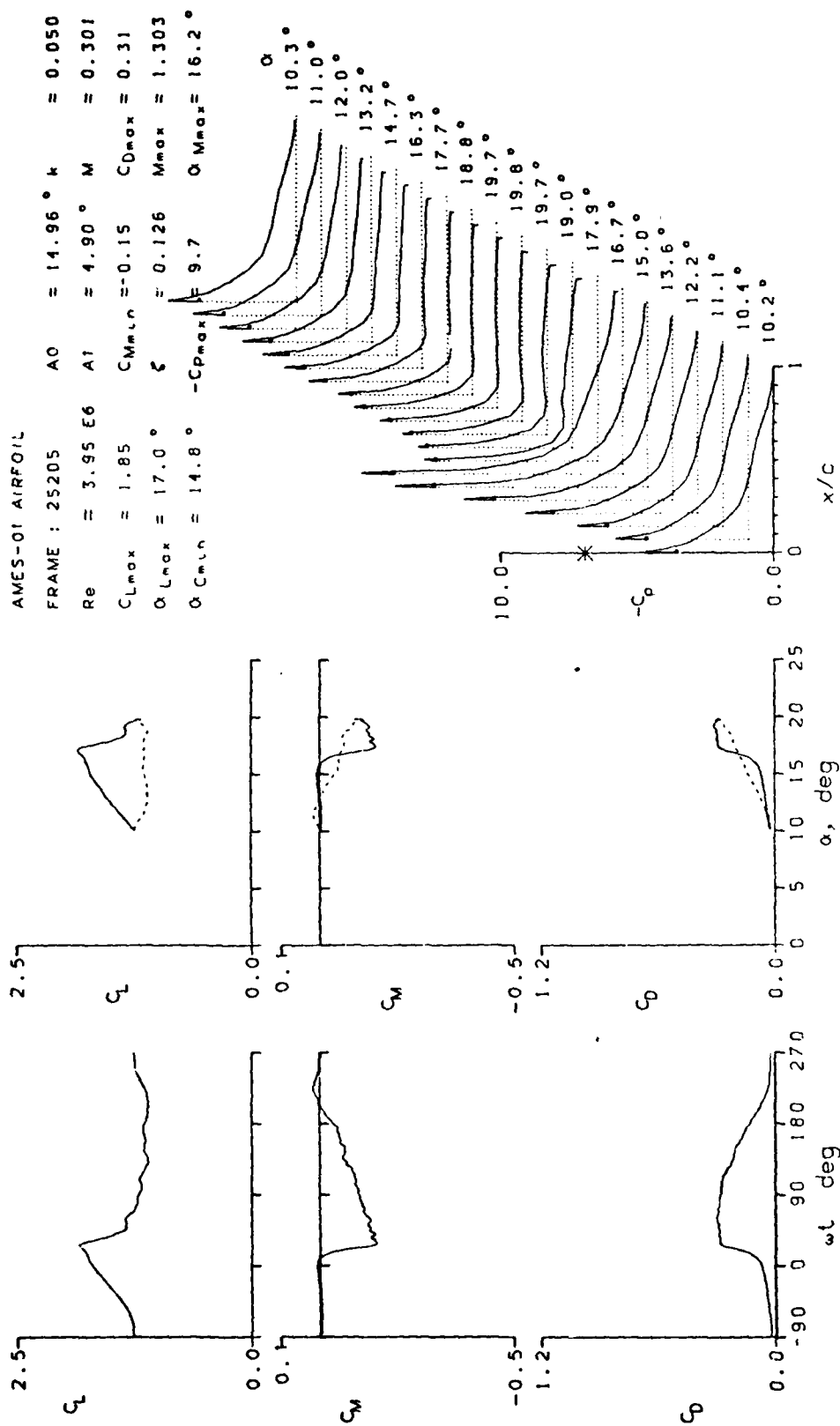


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25208
 $Re = 3.95 \times 10^6$
 $C_{Lmax} = 1.97$
 $\alpha_{Lmax} = 18.0^\circ$
 $\alpha_{Cmin} = 14.8^\circ$
 $A0 = 14.96^\circ$
 $A1 = 4.89^\circ$
 $C_{Mmin} = -0.21$
 $\zeta = 0.133$
 $-C_{Pmax} = 10.0$
 $k = 0.099$
 $M = 0.301$
 $C_{Dmax} = 0.39$
 $M_{max} = 1.341$
 $\alpha_{Mmax} = 16.5^\circ$

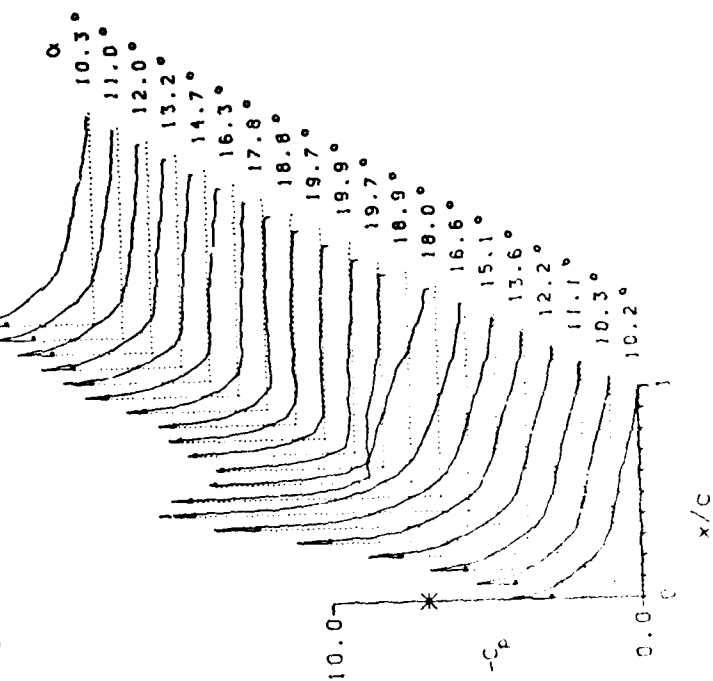
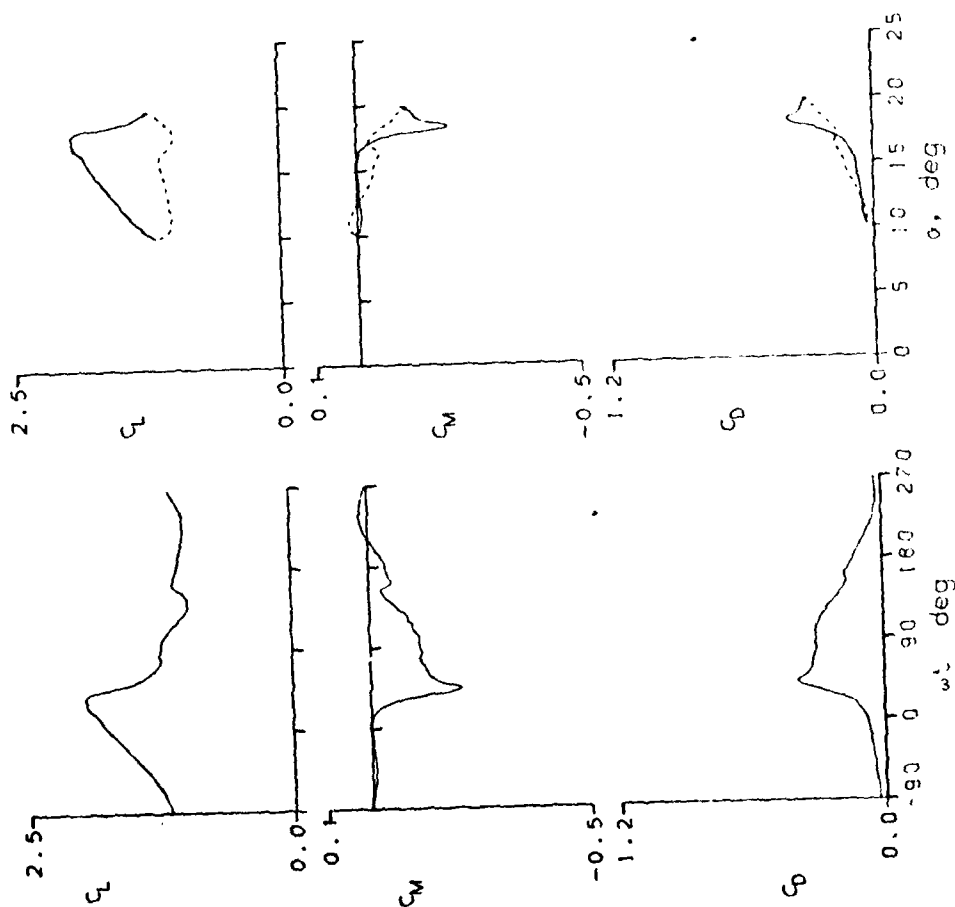


Figure 13.- Continued.

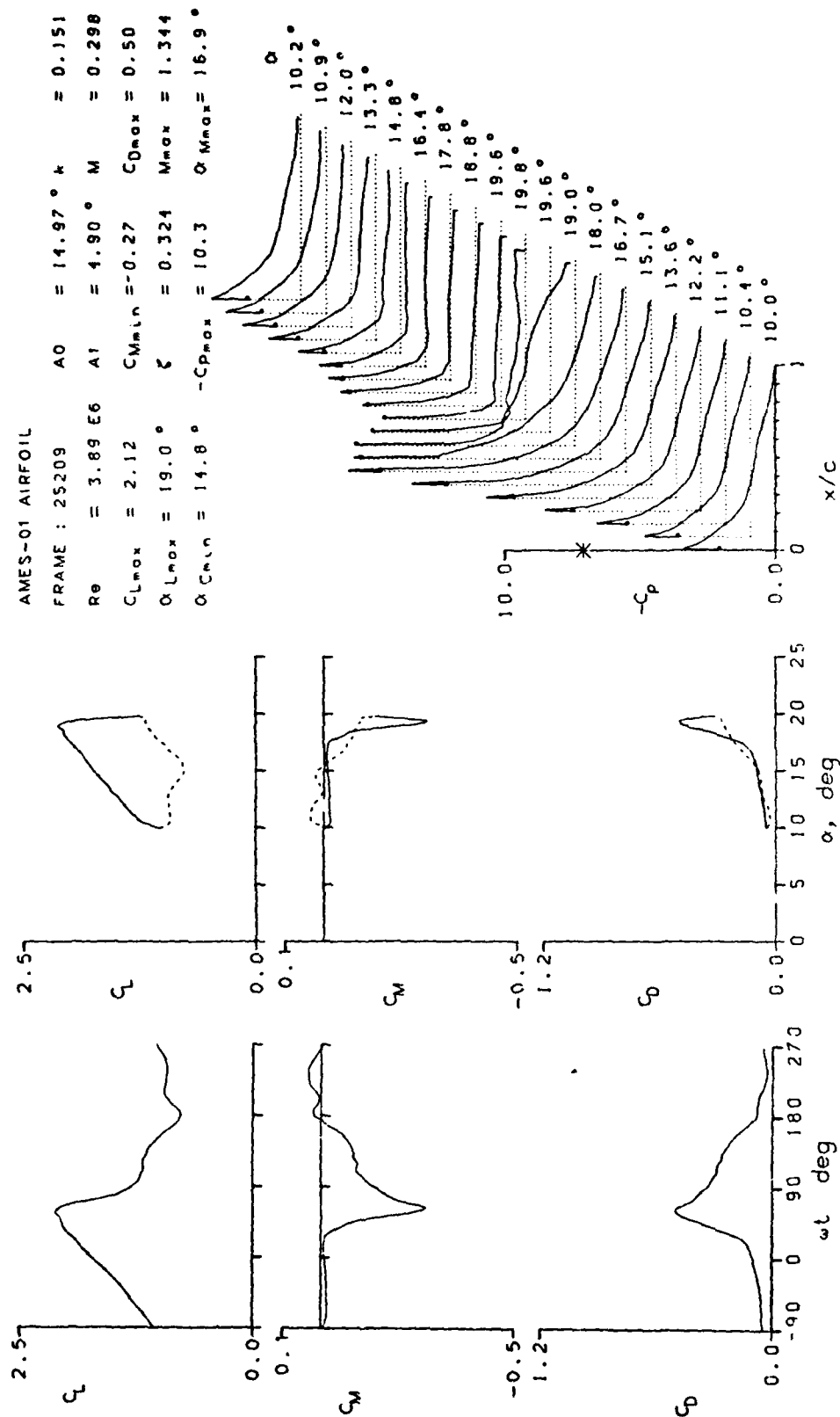


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25210 $A_0 = 14.94^\circ$ $h = 0.201$
 $Re = 3.87 E6$ $A_1 = 4.89^\circ$ $M = 0.297$
 $C_{Lmax} = 2.24$ $C_{Mmin} = -0.38$ $C_{Dmax} = 0.64$
 $\alpha_{Lmax} = 19.6^\circ$ $\zeta = 0.173$ $M_{max} = 1.323$
 $\alpha_{Cmin} = 14.7^\circ$ $-C_{Pmax} = 10.2$ $\alpha_{Mmax} = 17.2^\circ$

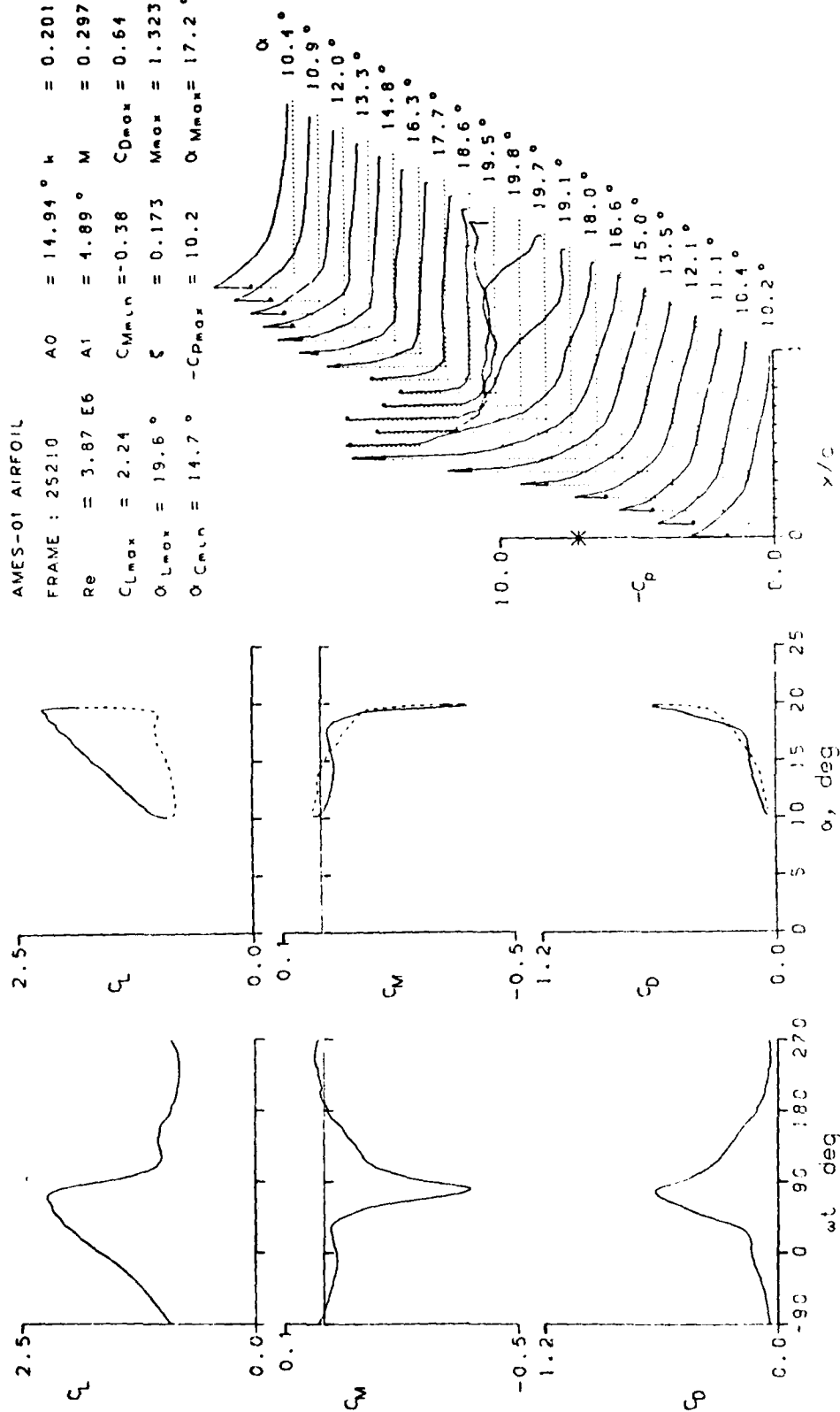


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25214	A0 = 10.90°	h = 0.049
Re = 3.93 E6	A1 = 4.91°	M = 0.302
C _{Lmax} = 1.69	C _{Mmin} = -0.15	C _{Dmax} = 0.25
α _{Lmax} = 15.3°	ξ = -0.199	M _{max} = 1.271
α _{Cmin} = 10.6°	-C _{Dmax} = 9.4	α _{Mmax} = 15.4°

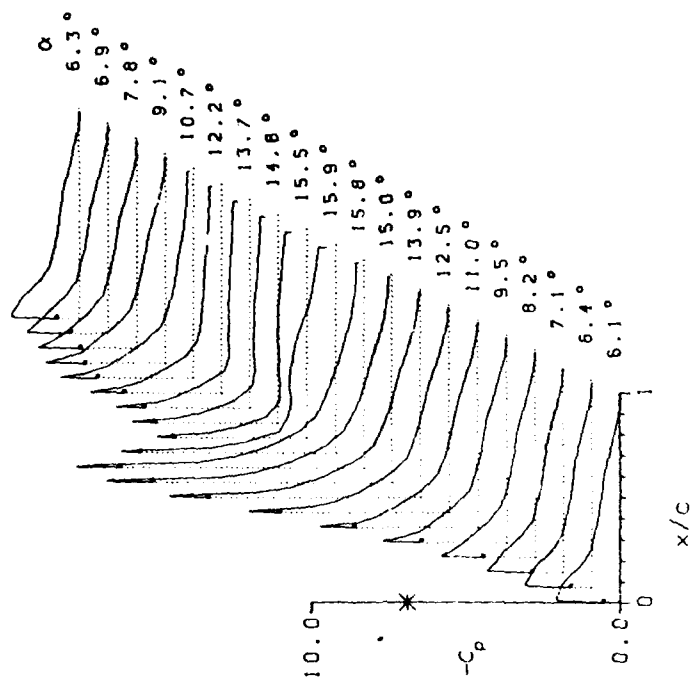
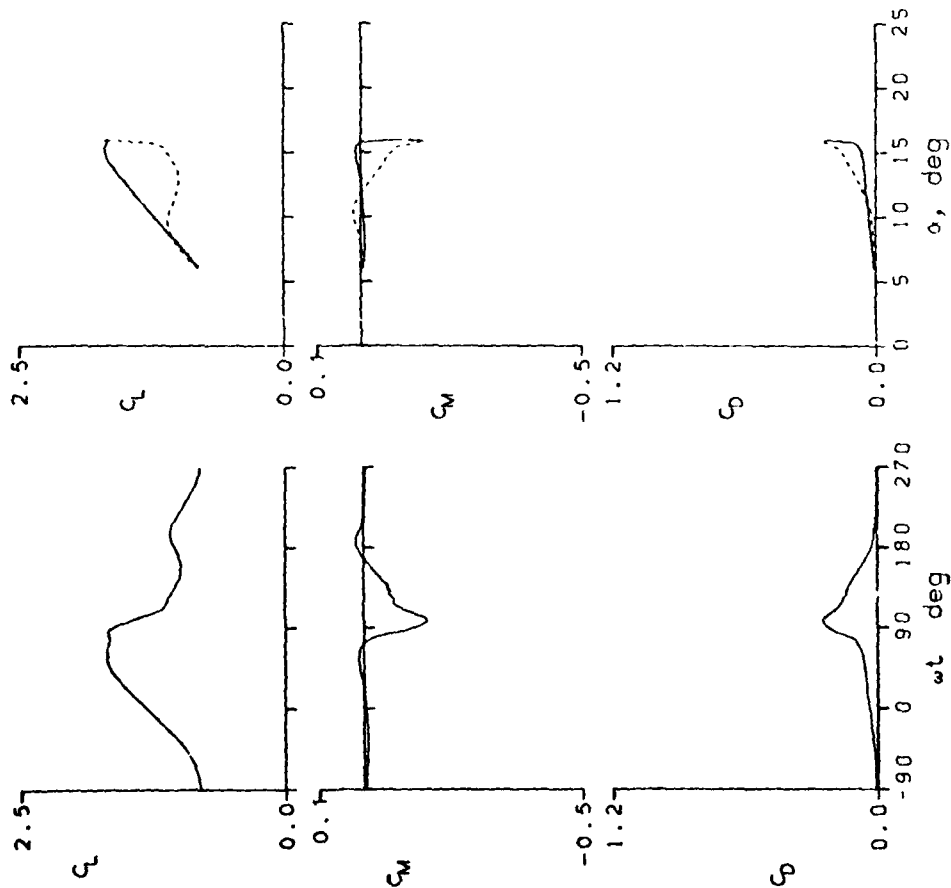


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25216 $A_0 = 10.91^\circ$ $k = 0.099$
 $Re = 3.91 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.76$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.19$
 $\alpha_{Lmax} = 15.8^\circ$ $\zeta = -0.007$ $M_{max} = 1.316$
 $\alpha_{Cmin} = 10.5^\circ$ $-C_{Dmax} = 9.8$ $\alpha_{Mmax} = 15.7^\circ$

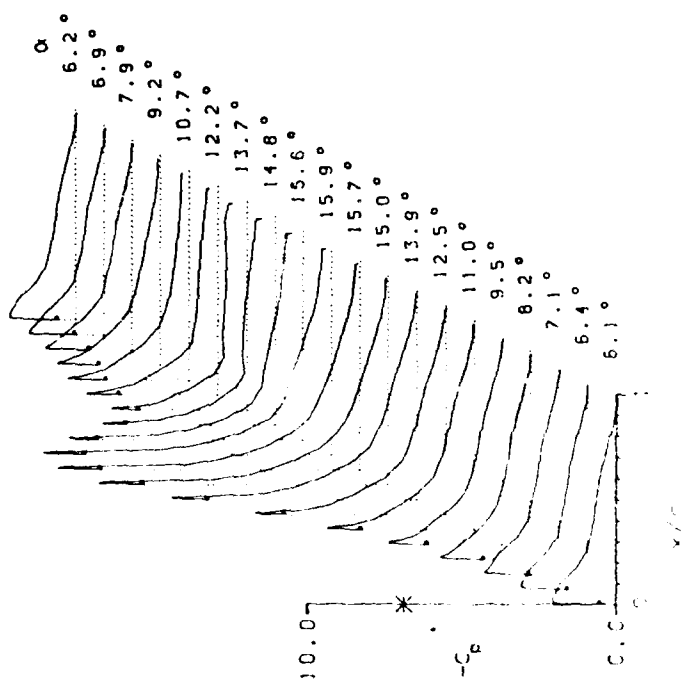
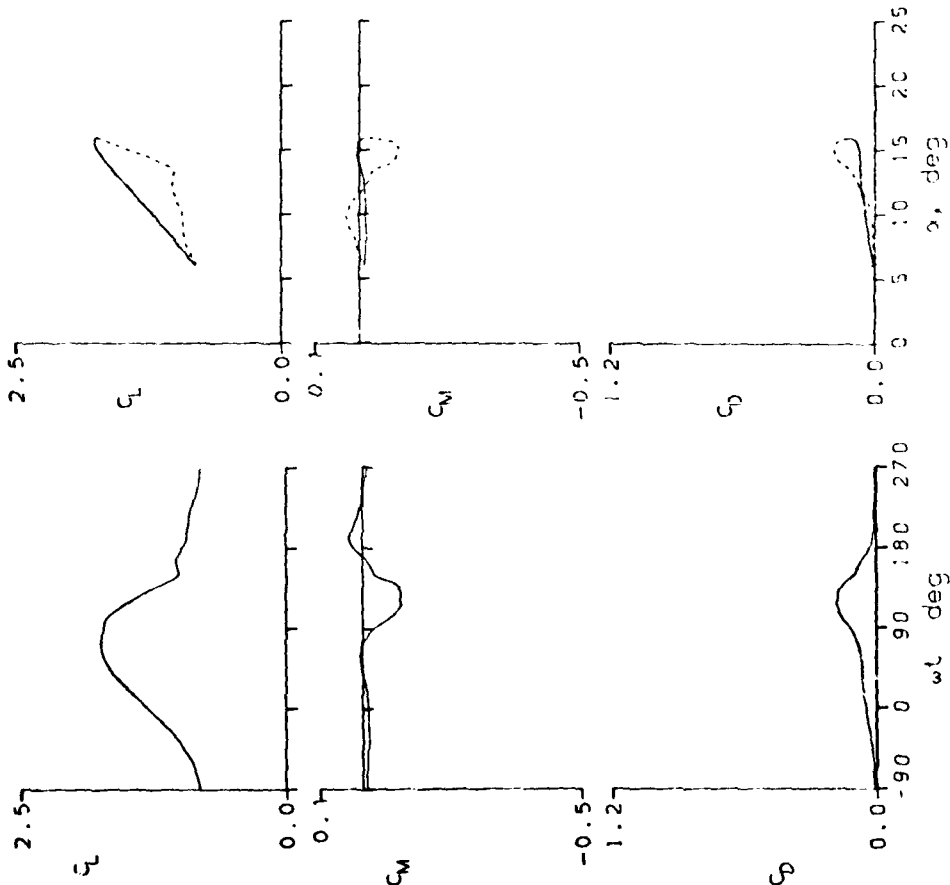


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25301 $A_0 = 4.96^\circ$ $k = 0.098$
 $Re = 3.90 \text{ E}6$ $A_1 = 5.00^\circ$ $M = 0.302$
 $C_{Lmax} = 1.22$ $C_{Mmin} = -0.02$ $C_{Dmax} = 0.04$
 $\alpha_{Lmax} = 9.9^\circ$ $\xi = 0.287$ $M_{max} = 0.779$
 $\alpha_{Cmin} = 4.7^\circ$ $-C_{Dmax} = 4.5$ $\alpha_{Mmax} = 9.9^\circ$

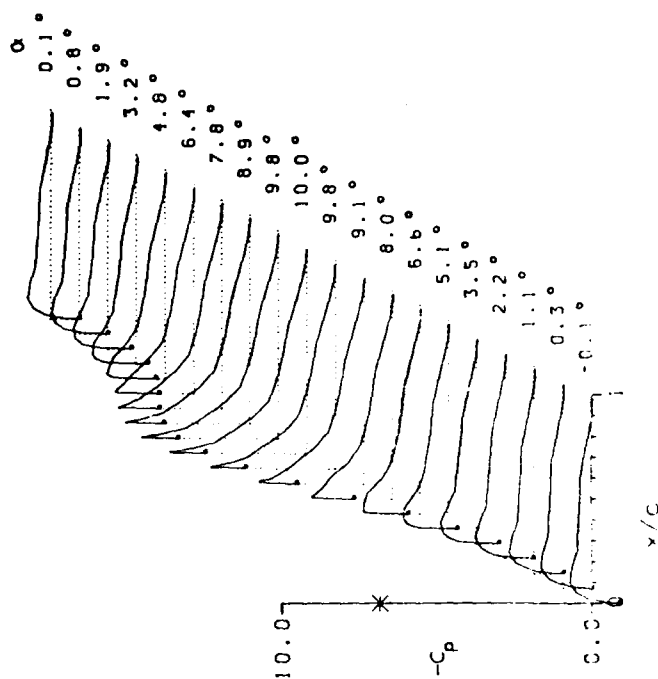
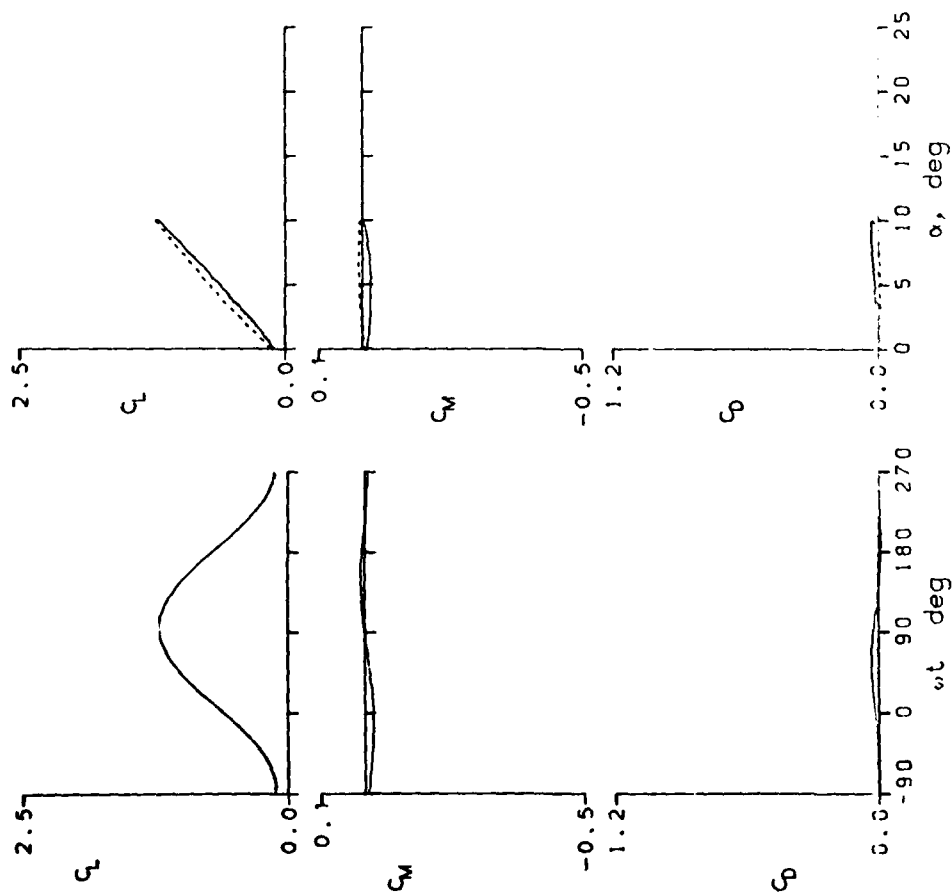


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 25303	A0 = 4.97°	k = 0.196
Re = 3.88 E6	A1 = 5.00°	M = 0.303
CLmax = 1.25	CMmin = -0.04	CDmax = 0.05
αLmax = 10.0°	ξ = 0.680	Mmax = 0.805
αCMln = 4.8°	-CDmax = 4.8	αMmax = 9.9°

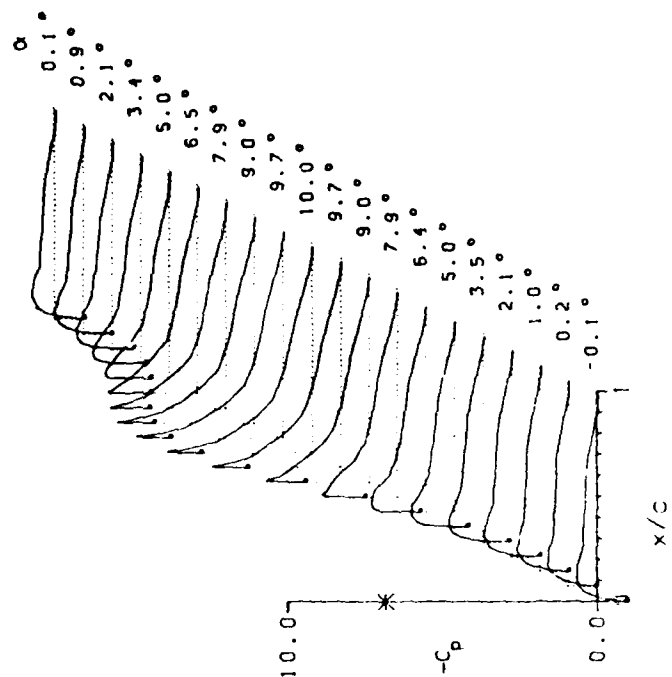
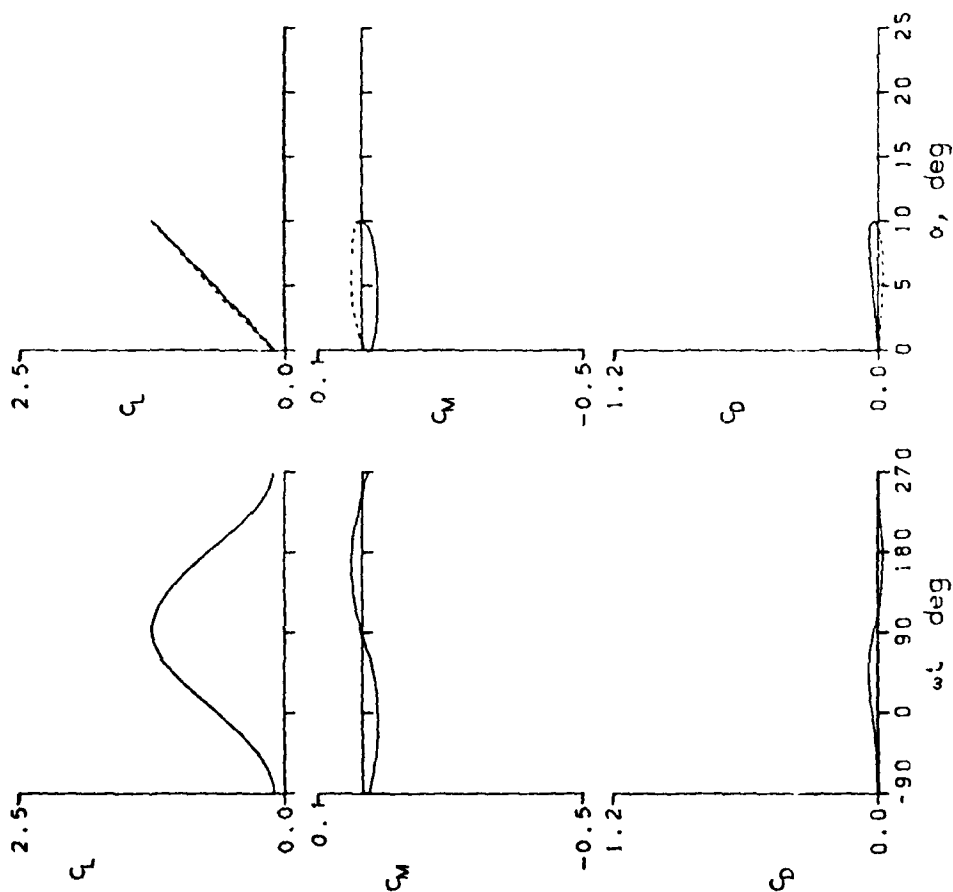


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25311 A0 = 4.86° k = 0.098
 Re = 3.85 E6 A1 = 10.11° M = 0.302
 C_{Lmax} = 1.72 C_{Mmin} = -0.03 C_{Dmax} = 0.08
 α_{Lmax} = 15.1° ζ = 0.297 M_{max} = 1.291
 α_{Cmin} = 4.4° -C_{pmax} = 9.6 α_{Mmax} = 15.0°

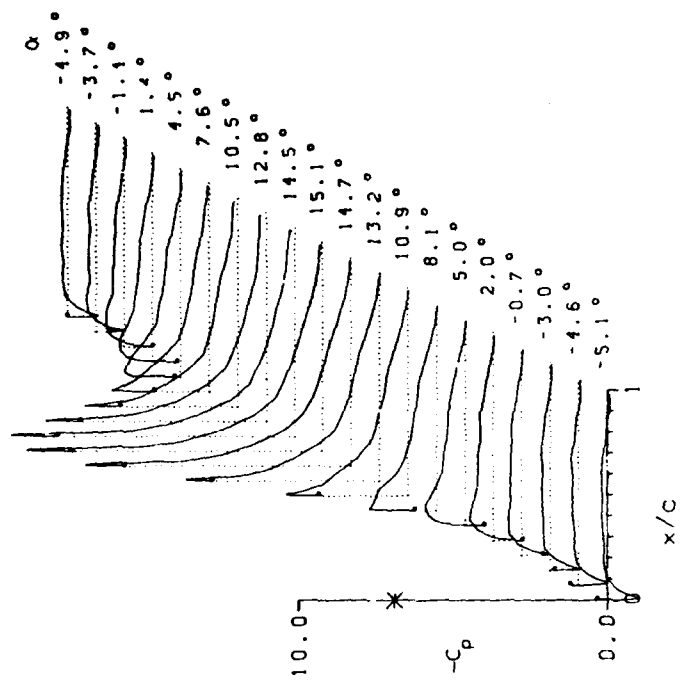
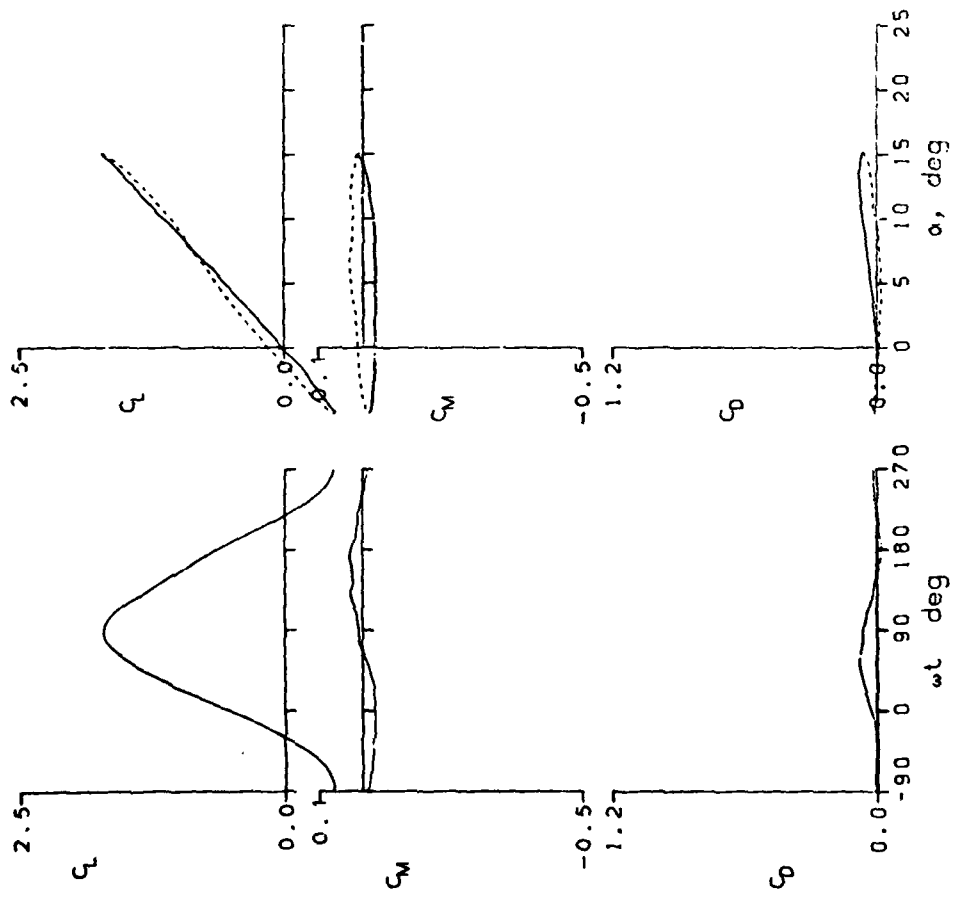


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 25319 $A_0 = 5.32^\circ$ $k = 0.098$
 $Re = 3.83 \text{ E}6$ $A_1 = 10.07^\circ$ $M = 0.302$
 $C_{L_{max}} = 1.74$ $C_{M_{min}} = -0.05$ $C_{D_{max}} = 0.11$
 $\alpha_{L_{max}} = 15.6^\circ$ $\xi = 0.216$ $M_{max} = 1.303$
 $\alpha_{C_{min}} = 4.8^\circ$ $-C_{D_{max}} = 9.7$ $\alpha_{M_{max}} = 15.6^\circ$

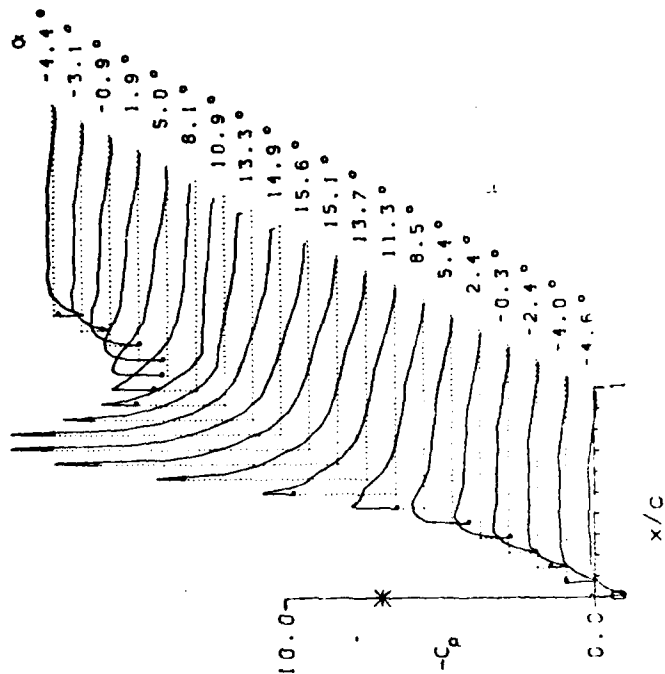
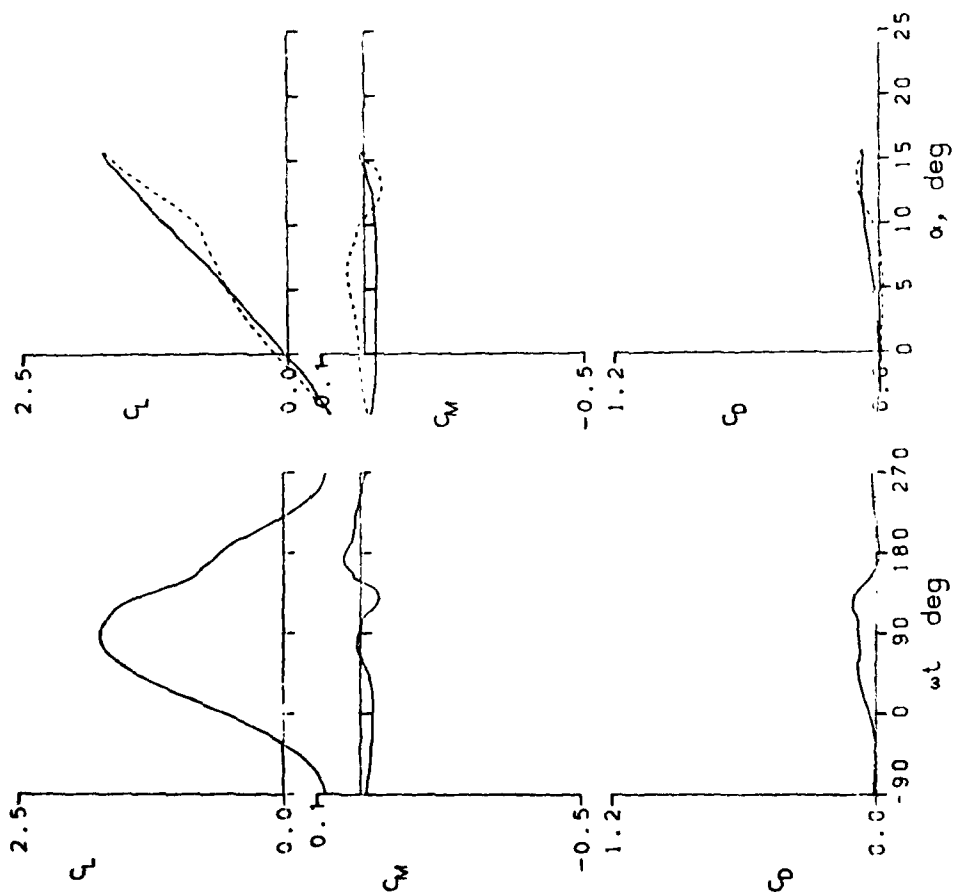


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29023	A0 = 14.85°	k = 0.025	TRIP
Re = 3.70 E6	A1 = 9.90°	M = 0.291	
C _{Lmax} = 1.78	C _{Mmin} = -0.23	C _{Dmax} = 0.47	
α _{Lmax} = 17.6°	ξ = 0.081	M _{max} = 1.299	
α _{Cmin} = 14.5°	-C _{pmax} = 10.4	α _{Mmax} = 16.6°	

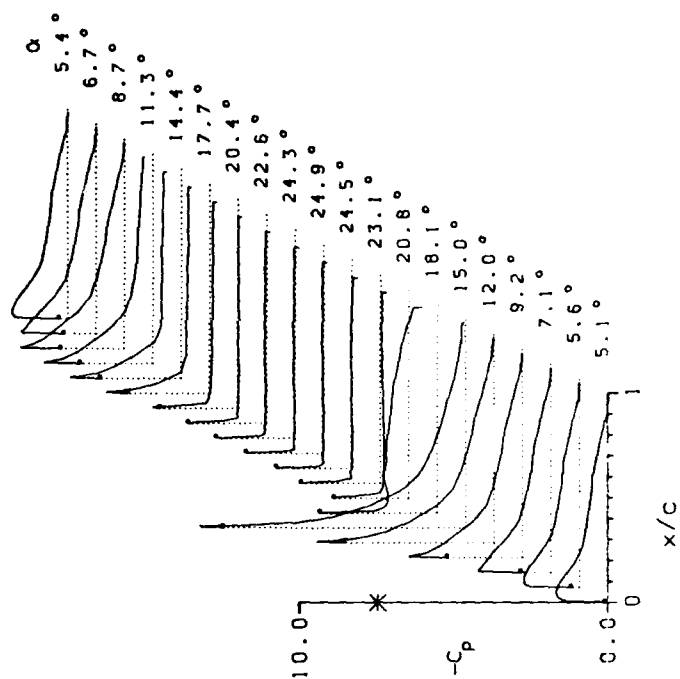
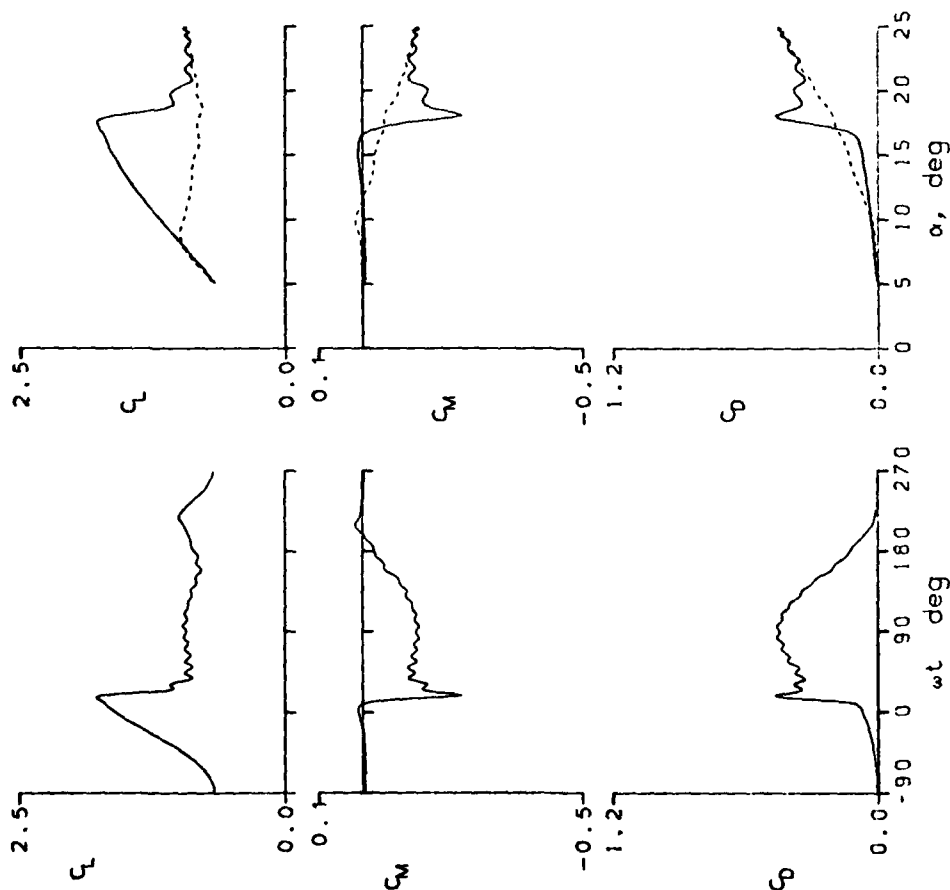


Figure 13.- Continued.

AMES-01 AIRFOIL TRIP

FRAME : 29101 A0 = 14.83° k = 0.050

Re = 3.54 E6 A1 = 9.90° M = 0.288

C_{Lmax} = 1.97 C_{Mmin} = -0.33 C_{Dmax} = 0.64

α_{Lmax} = 18.1° ζ = 0.307 M_{max} = 1.355

α_{Cmin} = 14.4° -C_{pmax} = 11.2 α_{Mmax} = 17.2°

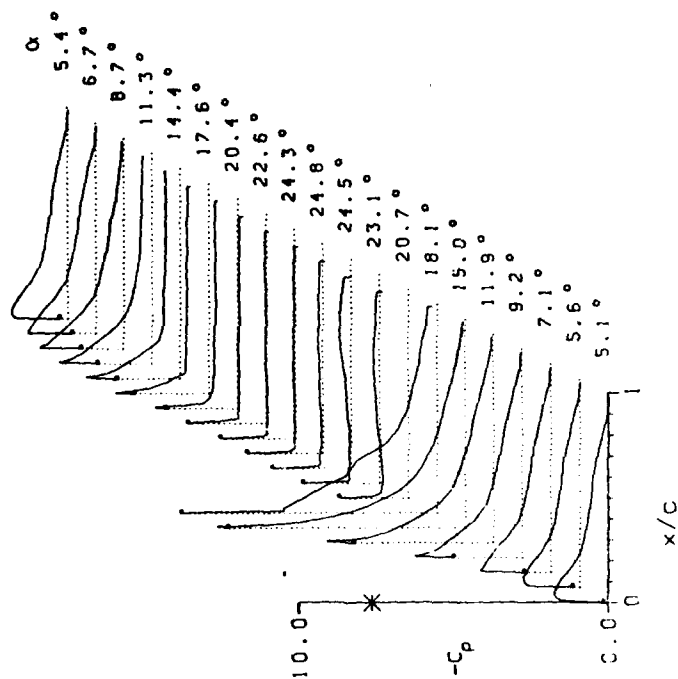
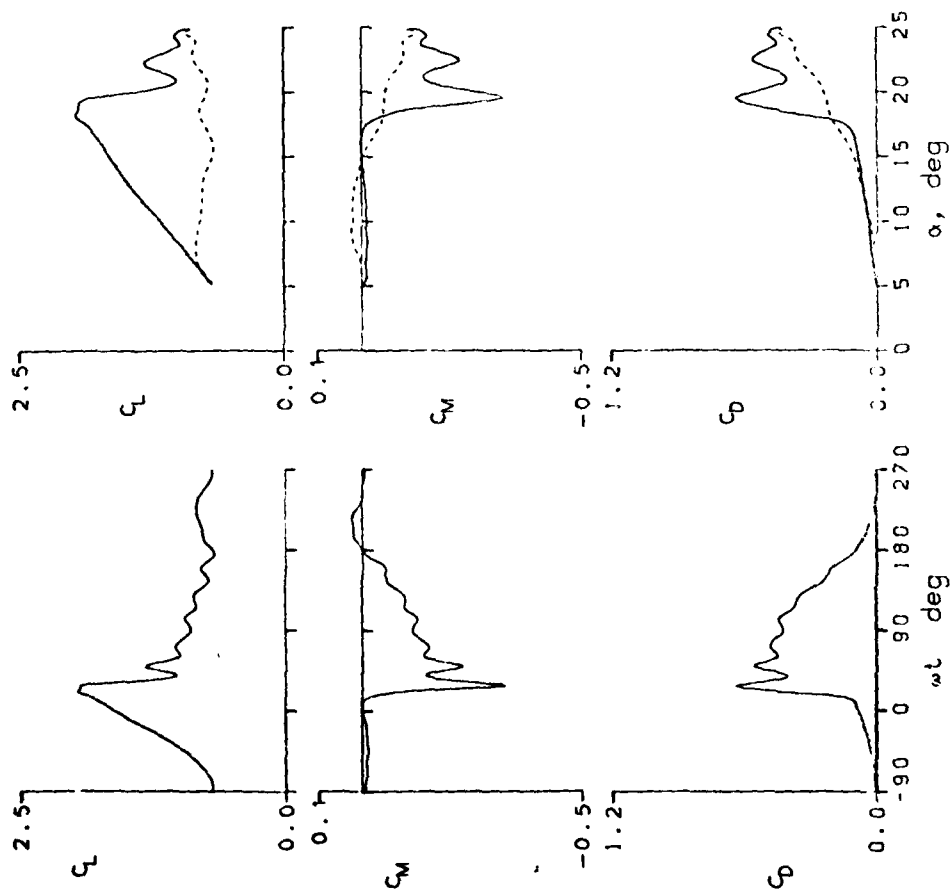


Figure 13.- Continued.

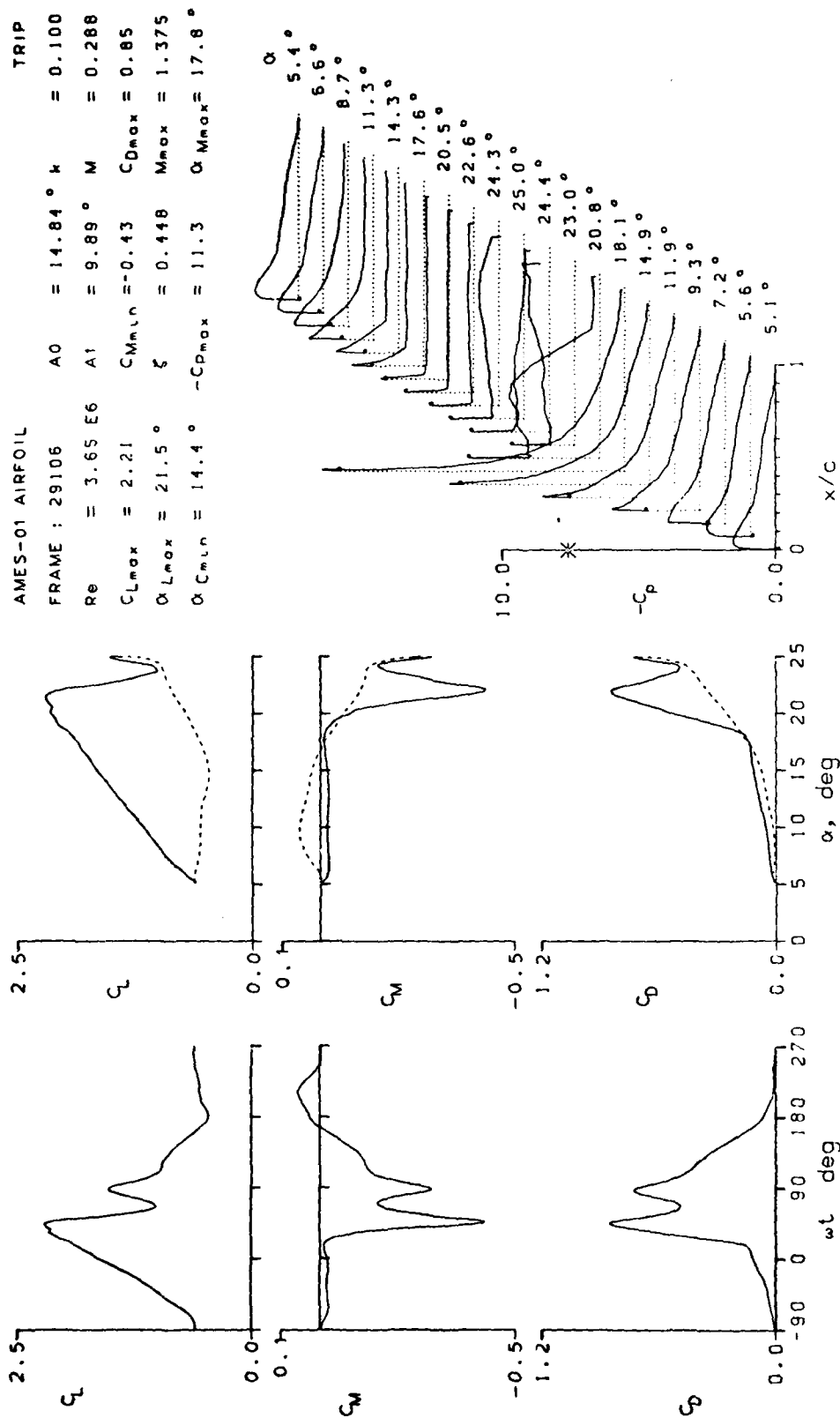


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29115	A0 = 14.83°	k = 0.049	TRIP
Re = 2.42 E6	A1 = 9.90°	M = 0.184	
CLmax = 2.65	CMmin = -0.35	CDmax = 0.73	
αLmax = 20.6°	ζ = 0.258	Mmax = 0.745	
αCmin = 14.4°	-CPmax = 12.3	αMmax = 18.9°	

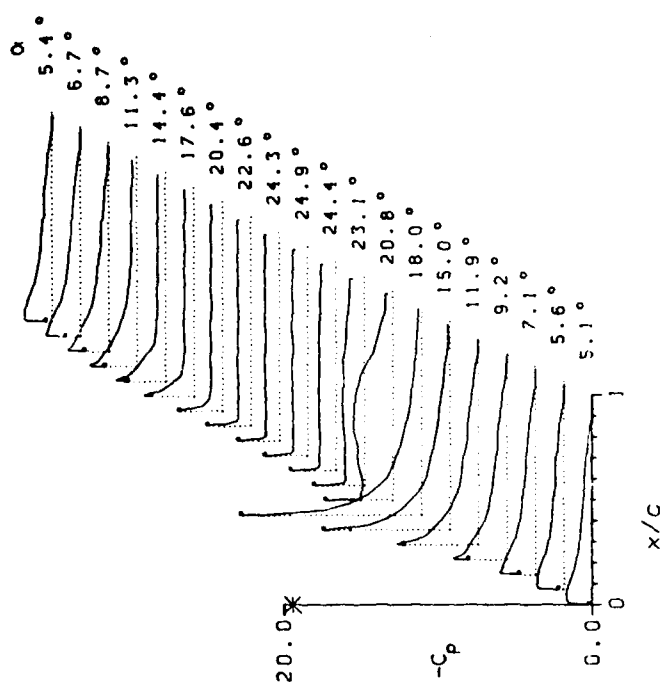
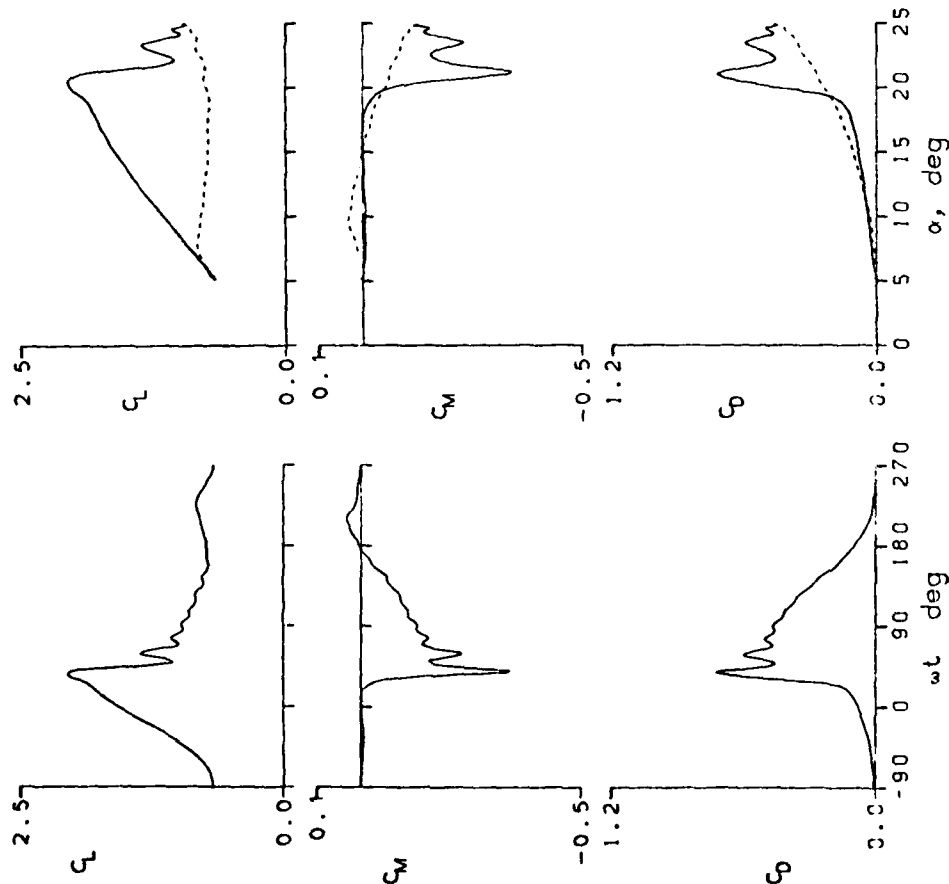


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29117	A0 = 14.81°	k = 0.099	TRIP
Re = 2.42 E6	A1 = 9.91°	M = 0.184	
CLmax = 2.32	CMmin = -0.40	CDmax = 0.91	
αLmax = 22.0°	ξ = 0.292	Mmax = 0.823	
αCmin = 14.4°	-Cpmax = 14.5	αMmax = 20.6°	

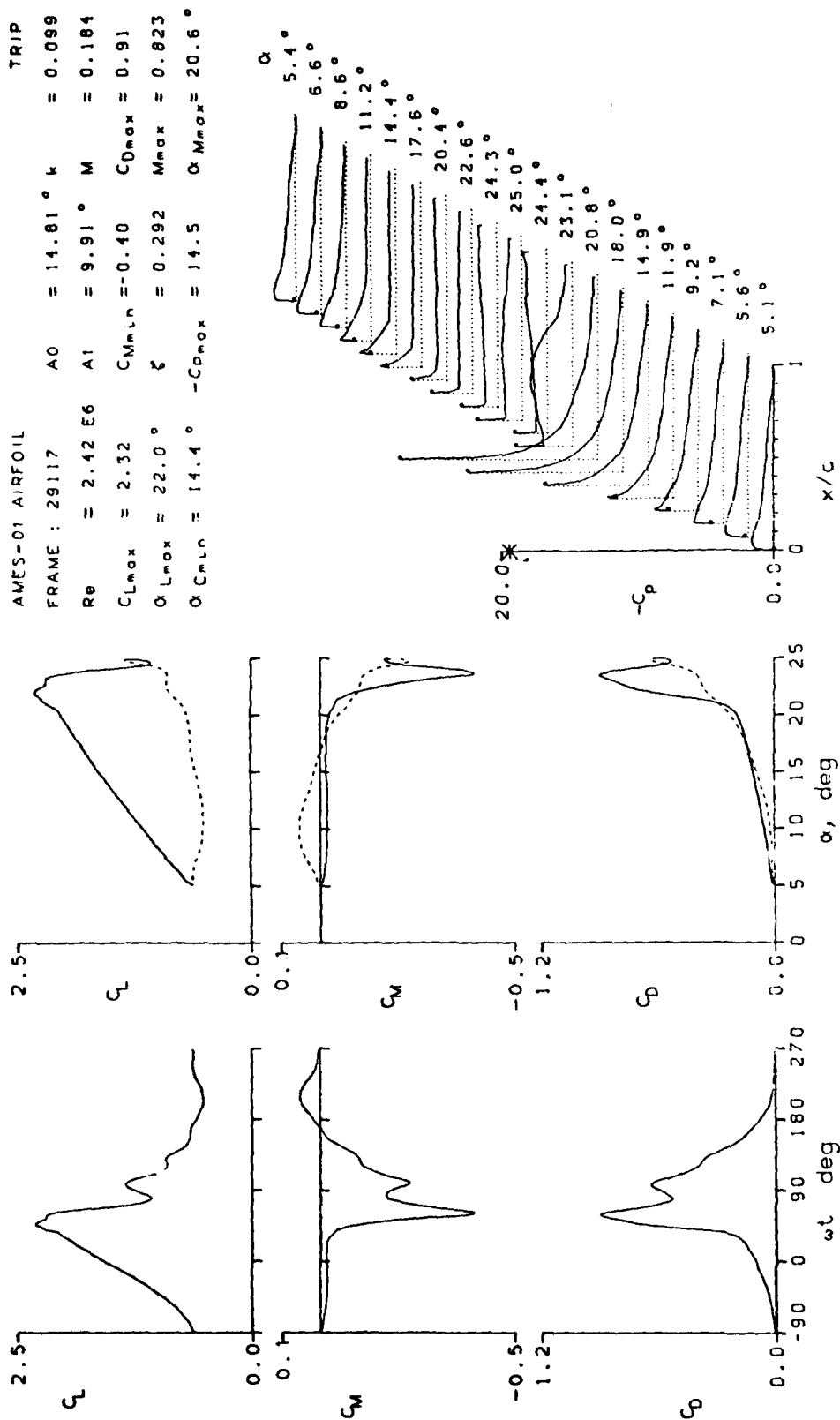


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29119	A0 = 1.11°	k = 0.148	TRIP
Re = 2.42 E6	A1 = 9.90°	M = 0.184	
C _{Lmax} = 2.46	C _{Mmin} = -0.46	C _{Dmax} = 1.06	
α _{Lmax} = 23.1°	ξ = 0.109	M _{max} = 0.871	
α _{Cmin} = 14.4°	-C _{Dmax} = 15.8	α _{Mmax} = 21.6°	

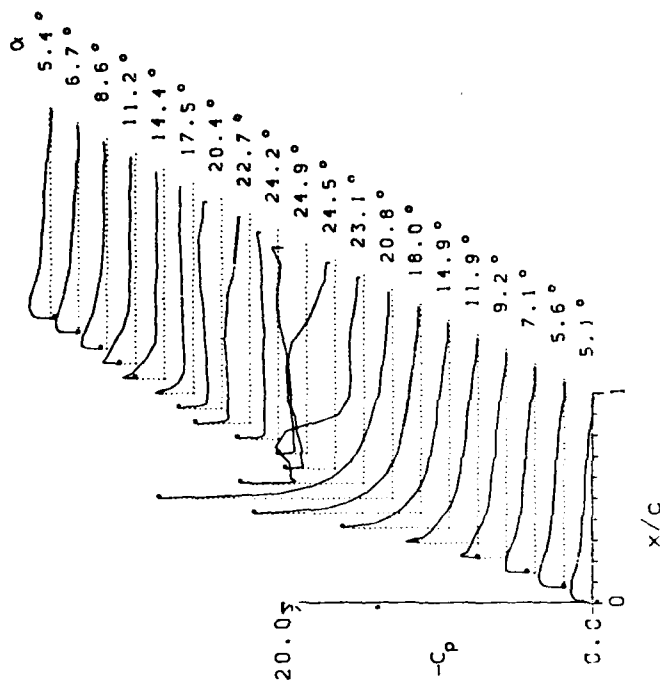
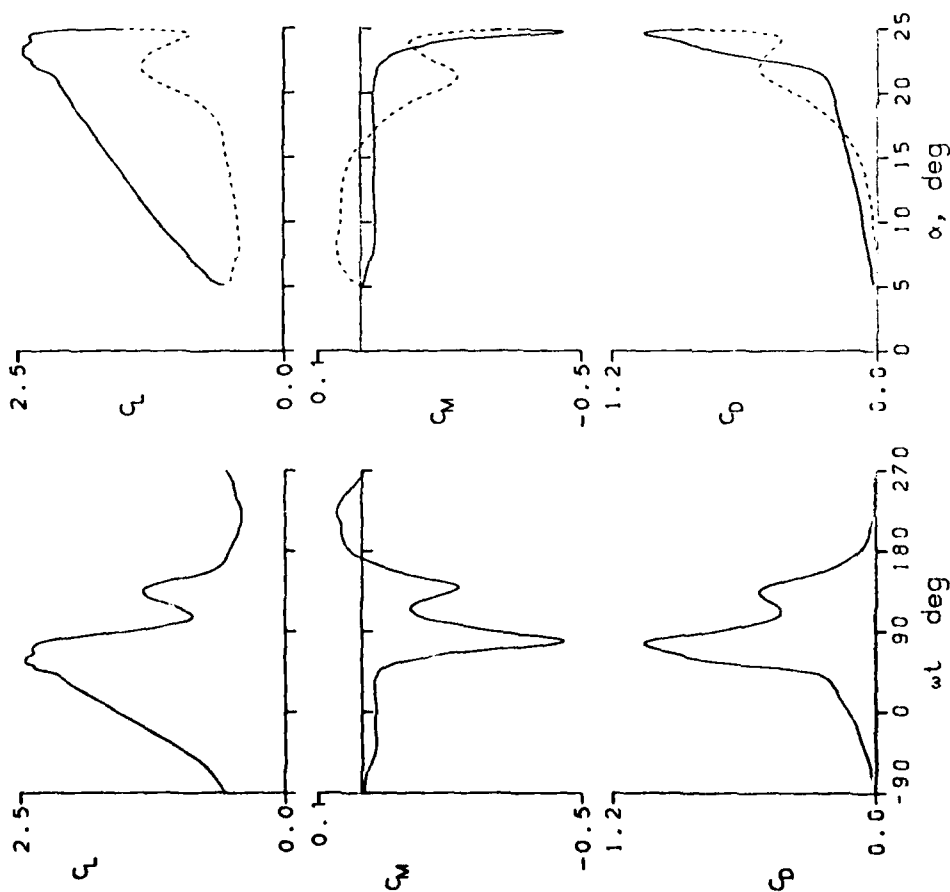


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 29205 $A_0 = 4.88^\circ$ $k = 0.010$
 $Re = 3.95 \text{ E}6$ $A_1 = 10.05^\circ$ $M = 0.301$
 $C_{Lmax} = 1.61$ $C_{Mmin} = -0.03$ $C_{Dmax} = 0.10$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = -0.003$ $M_{max} = 1.192$
 $\alpha_{Cmin} = 4.4^\circ$ $-C_{Dmax} = 8.8$ $\alpha_{Mmax} = 14.9^\circ$

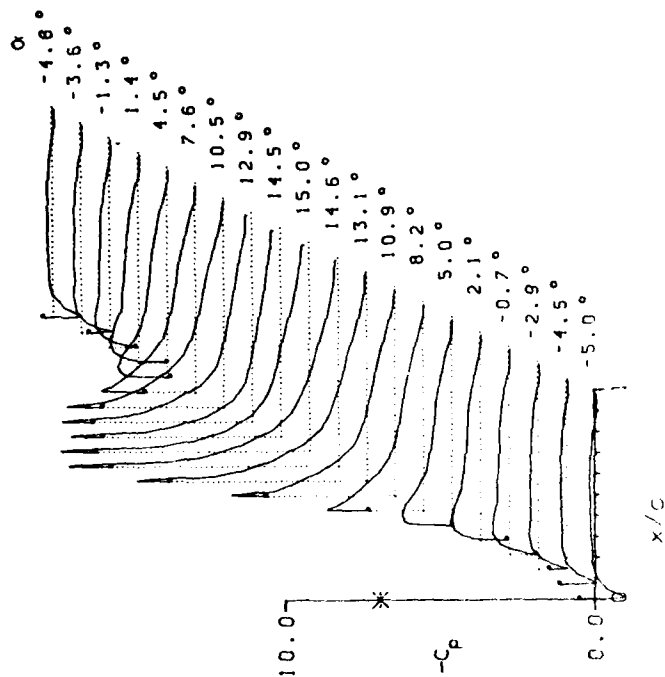
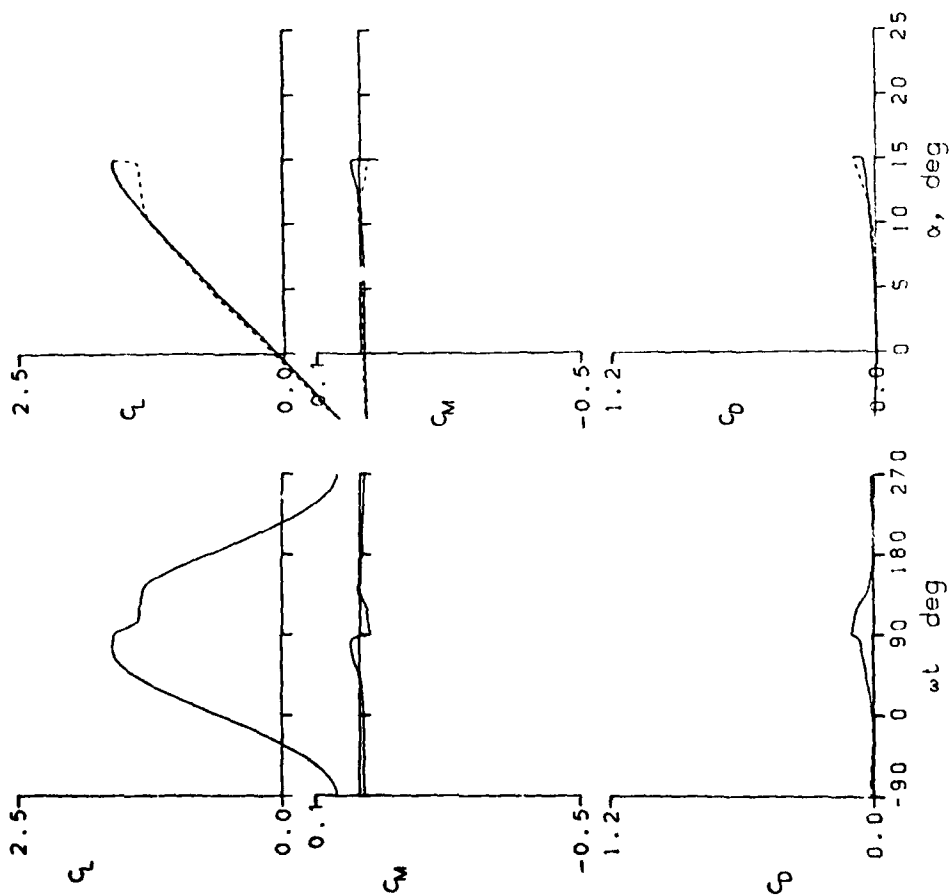


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29207	$A_0 = 4.80^\circ$	$h = 0.050$
$Re = 3.92 \text{ E}6$	$A_1 = 10.08^\circ$	$M = 0.301$
$C_{Lmax} = 1.69$	$C_{Mmin} = -0.03$	$C_{Dmax} = 0.09$
$\alpha_{Lmax} = 14.8^\circ$	$\xi = 0.103$	$M_{max} = 1.252$
$\alpha_{Cmin} = 4.3^\circ$	$-C_{Dmax} = 9.3$	$\alpha_{Mmax} = 14.9^\circ$

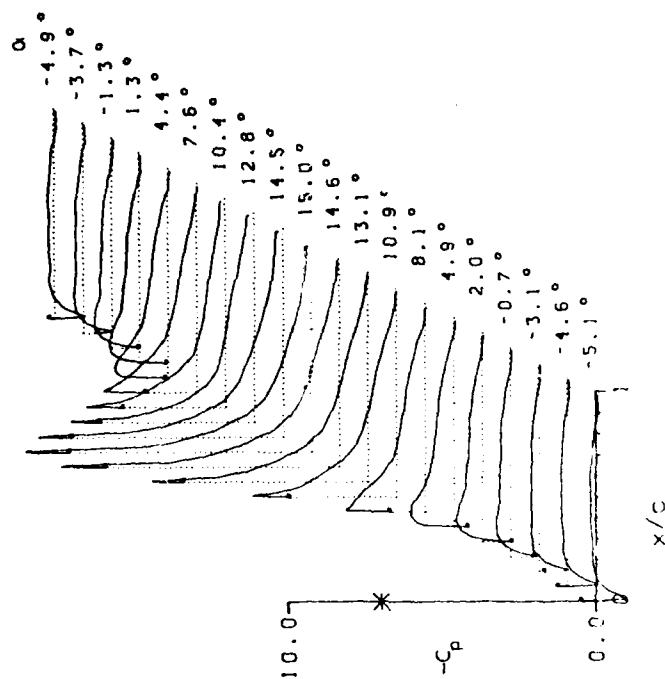
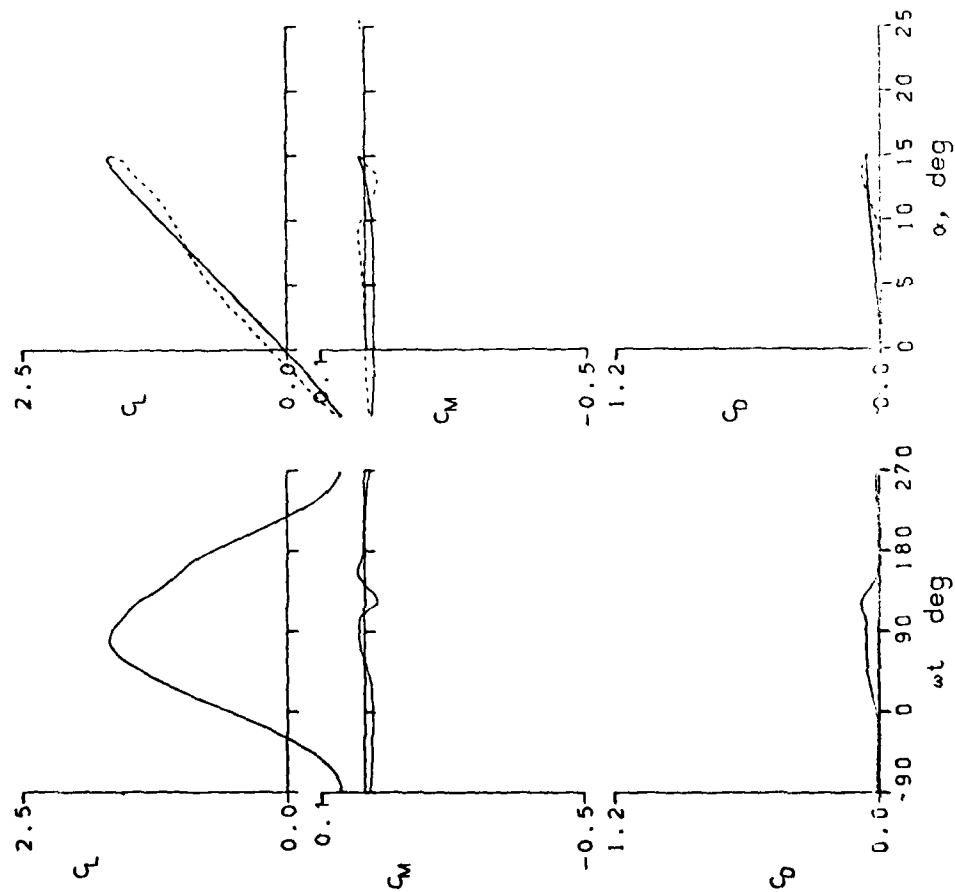


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29211	A0 = 4.85°	h = 0.099
Re = 3.90 E6	A1 = 10.06°	M = 0.301
C _{Lmax} = 1.71	C _{Mmin} = -0.03	C _{Dmax} = 0.08
α _{Lmax} = 15.0°	ξ = 0.317	M _{max} = 1.281
α _{Cmin} = 4.3°	-C _{Dmax} = 9.6	α _{Mmax} = 15.0°

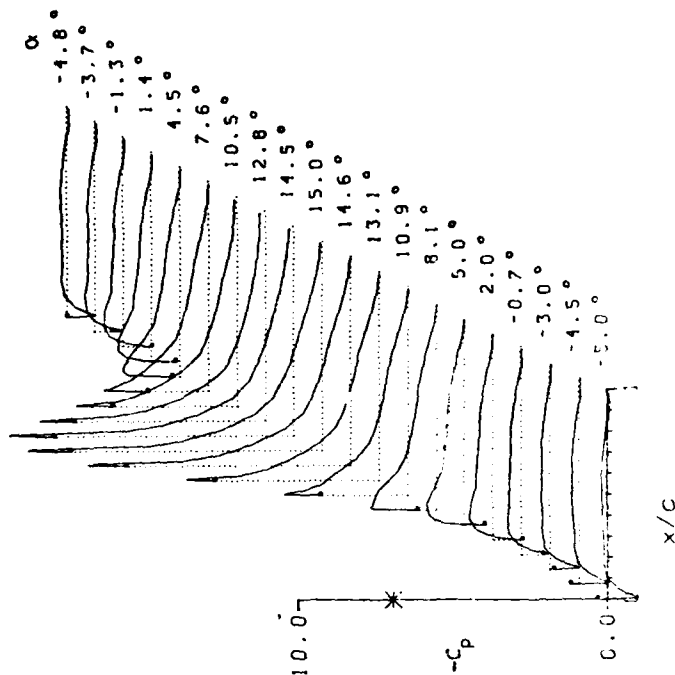
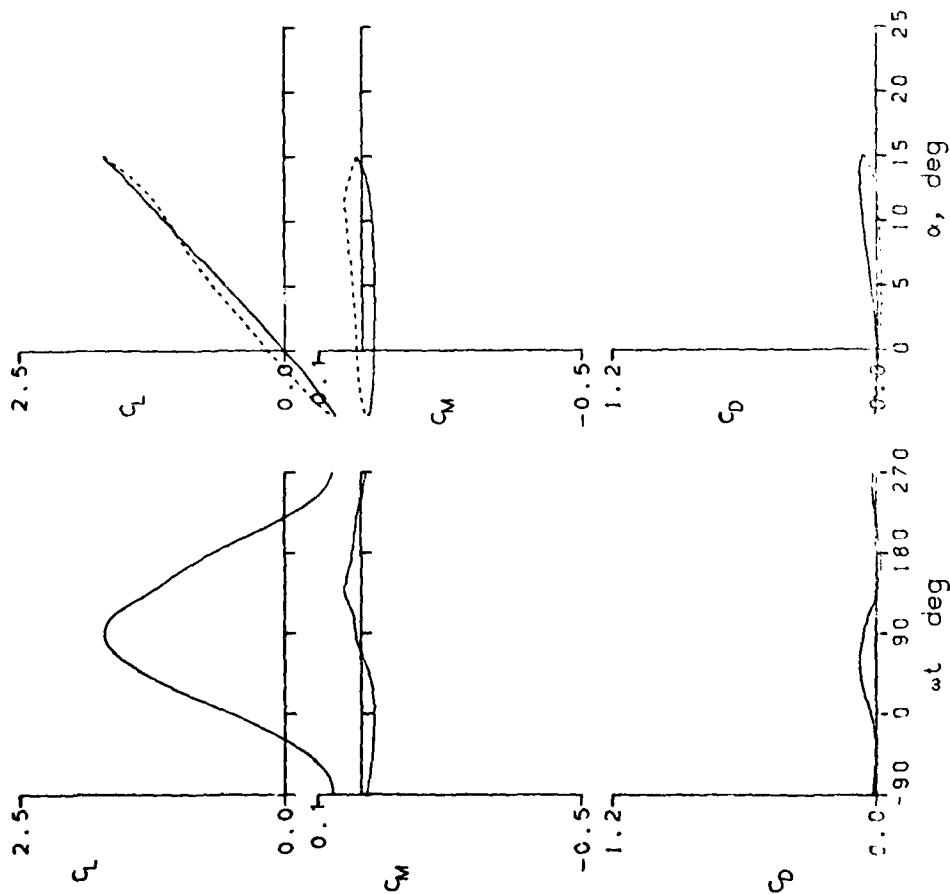


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29213	A0 = 4.80°	k = 0.148
Re = 3.90 E6	A1 = 10.06°	M = 0.301
C _{Lmax} = 1.74	C _{Mmin} = -0.05	C _{Dmax} = 0.10
α _{Lmax} = 14.9°	ξ = 0.473	M _{max} = 1.317
α _{Cmin} = 4.4°	-C _{pmax} = 9.9	α _{Mmax} = 14.7°

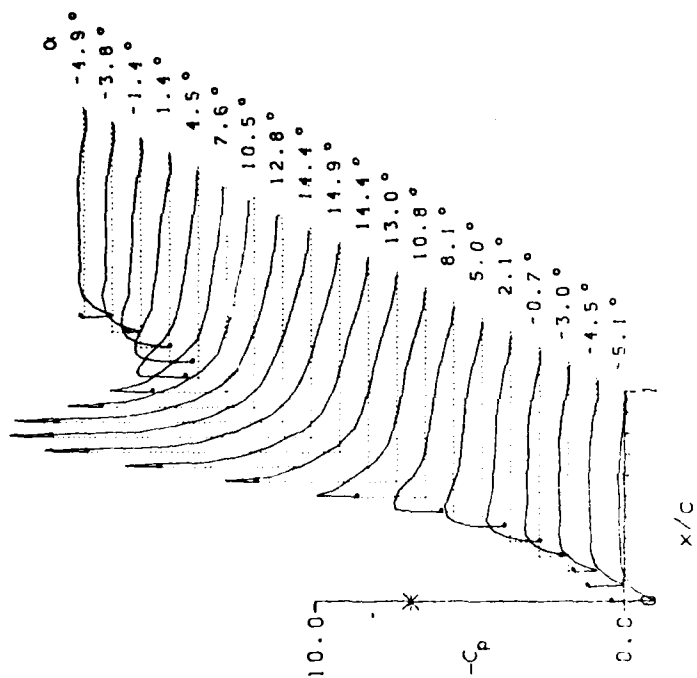
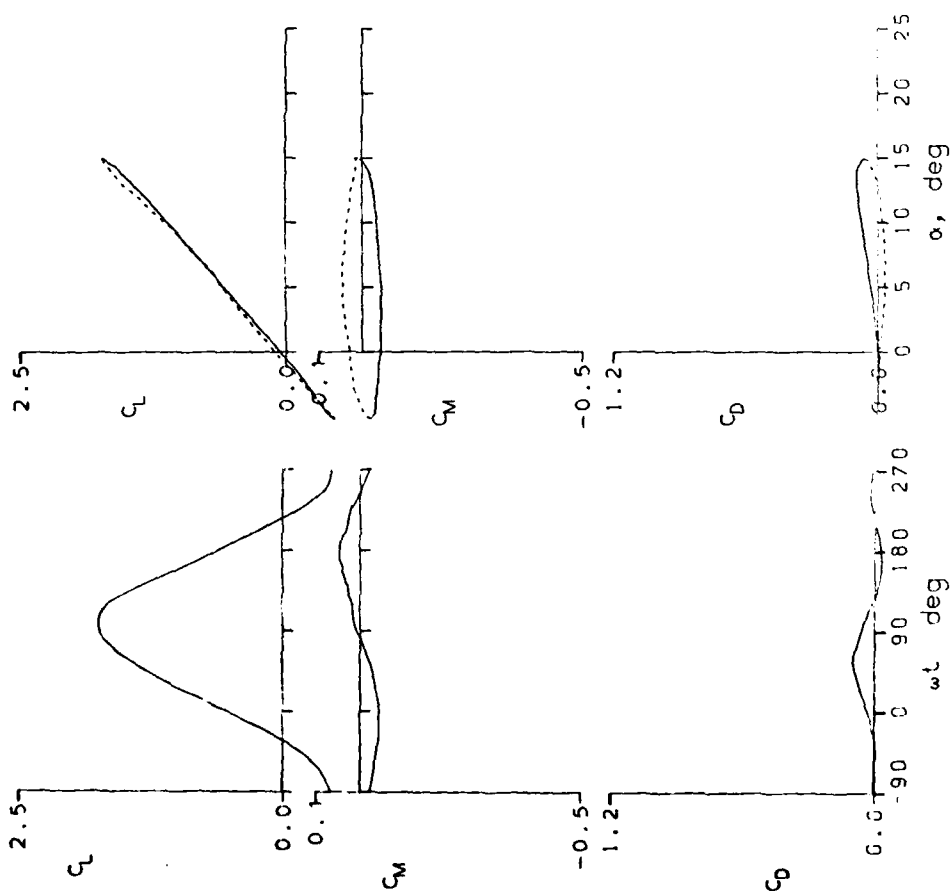


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 29215	A0 = 4.79°	k = 0.148
Re = 3.89 E6	A1 = 10.06°	M = 0.301
C _{Lmax} = 1.74	C _{Mmin} = -0.05	C _{Dmax} = 0.10
α _{Lmax} = 14.9°	ξ = 0.471	M _{max} = 1.317
α _{Cmin} = 4.4°	-C _{pmax} = 9.9	α _{Mmax} = 14.7°

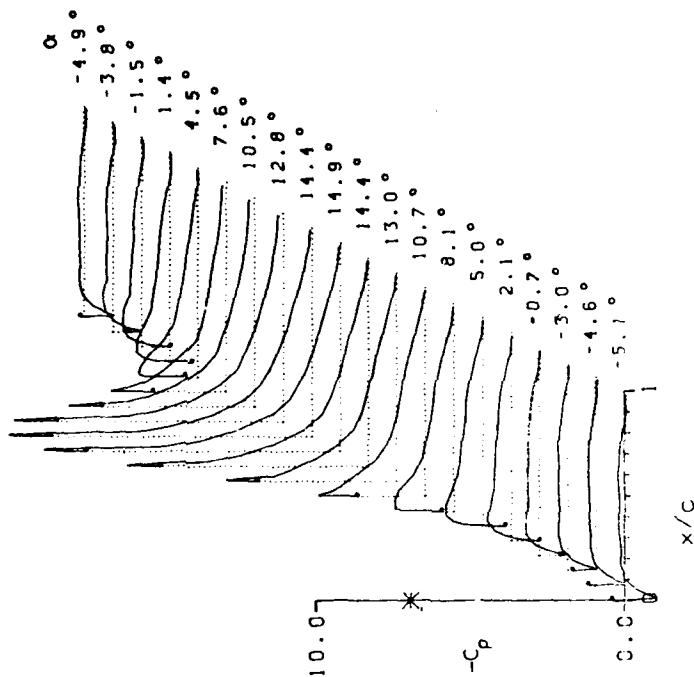
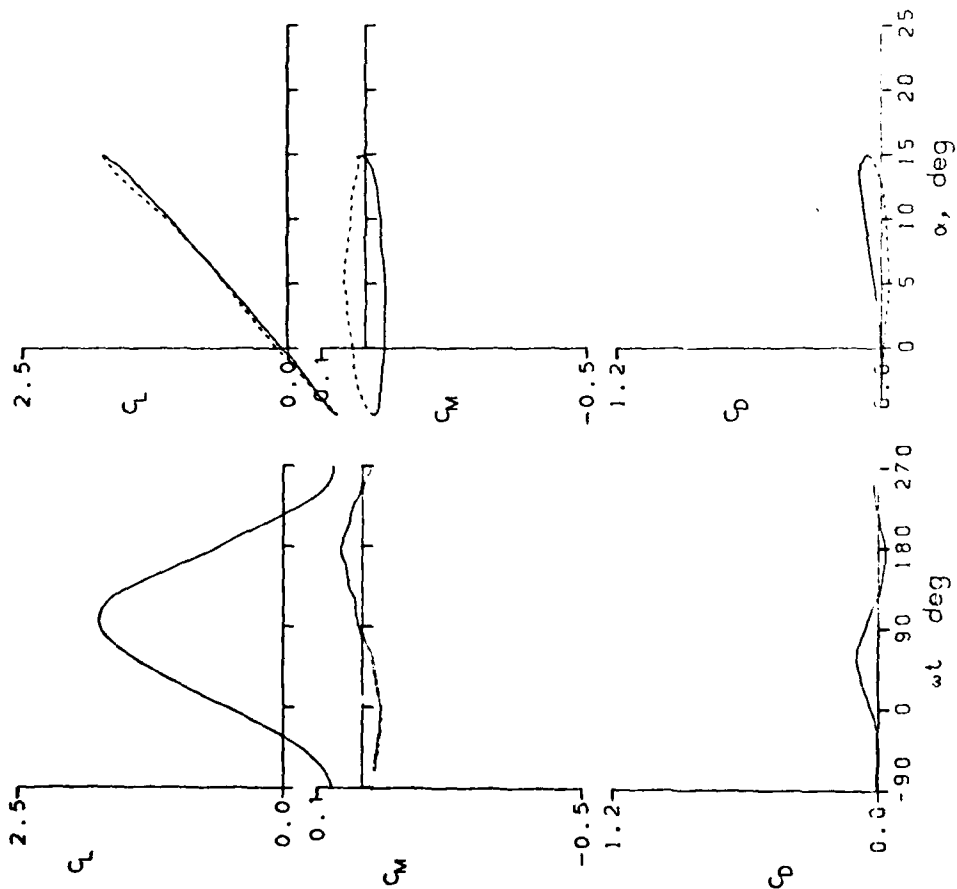


Figure 13.- Continued.

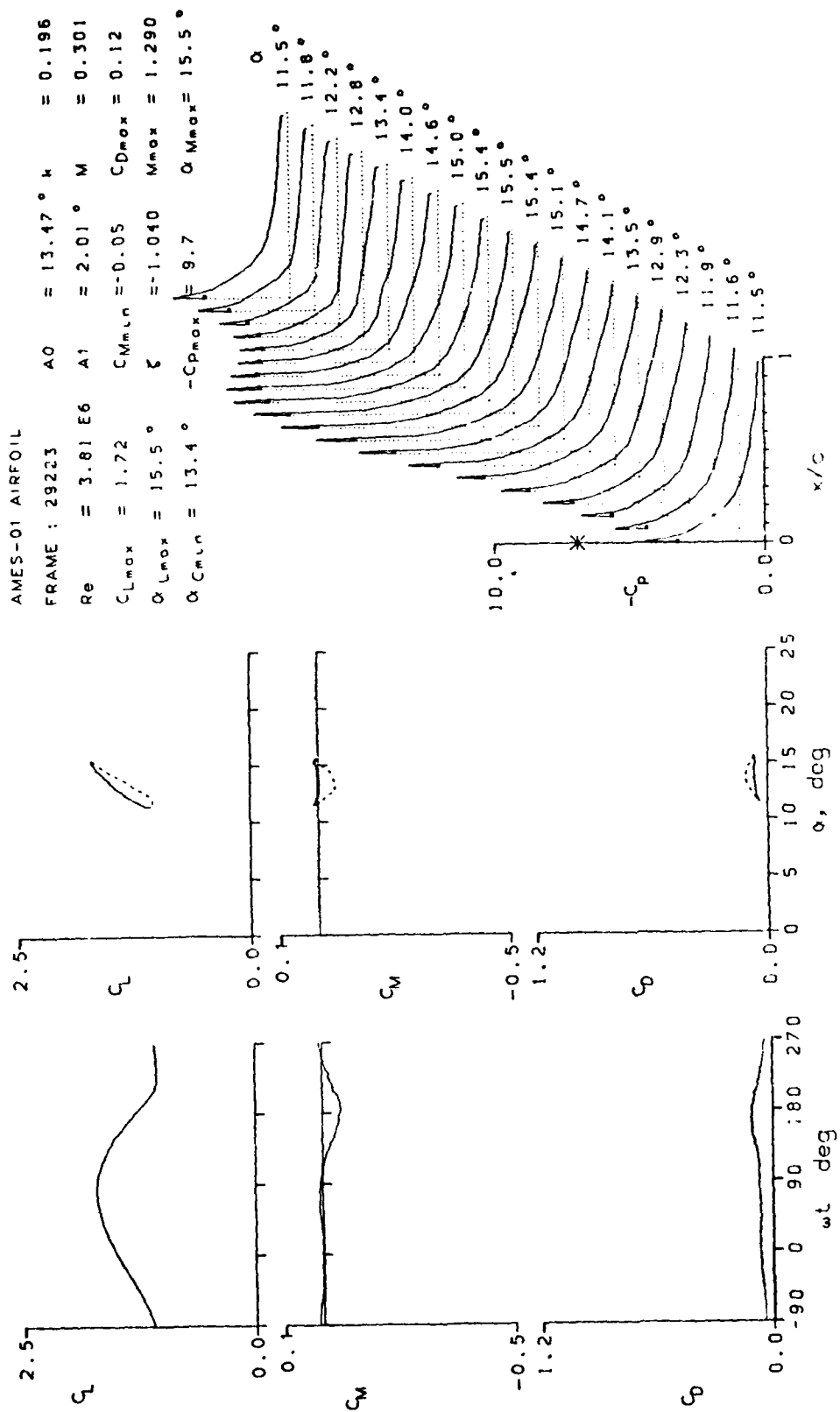


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 29304 $A_0 = 14.41^\circ$ $k = 0.197$
 $Re = 3.78 \text{ E} 6$ $A_1 = 2.01^\circ$ $M = 0.300$
 $C_{Lmax} = 1.86$ $C_{Mmin} = -0.17$ $C_{Dmax} = 0.31$
 $\alpha_{Lmax} = 16.5^\circ$ $\zeta = -1.836$ $M_{max} = 1.305$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{pmax} = 9.9$ $\alpha_{Mmax} = 16.2^\circ$

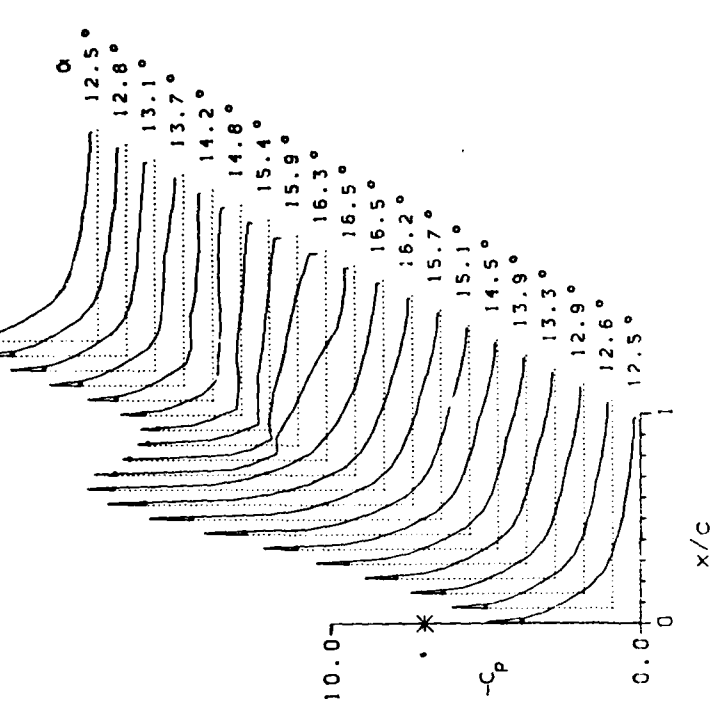
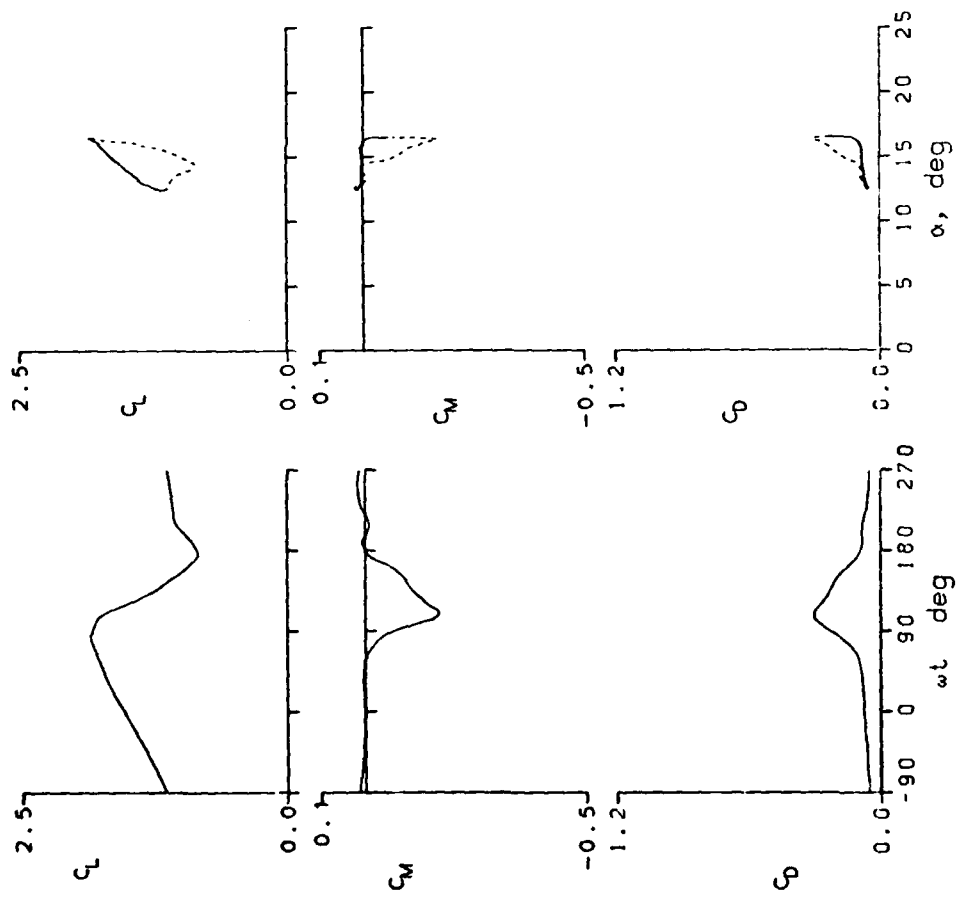


Figure 13.- Continued.

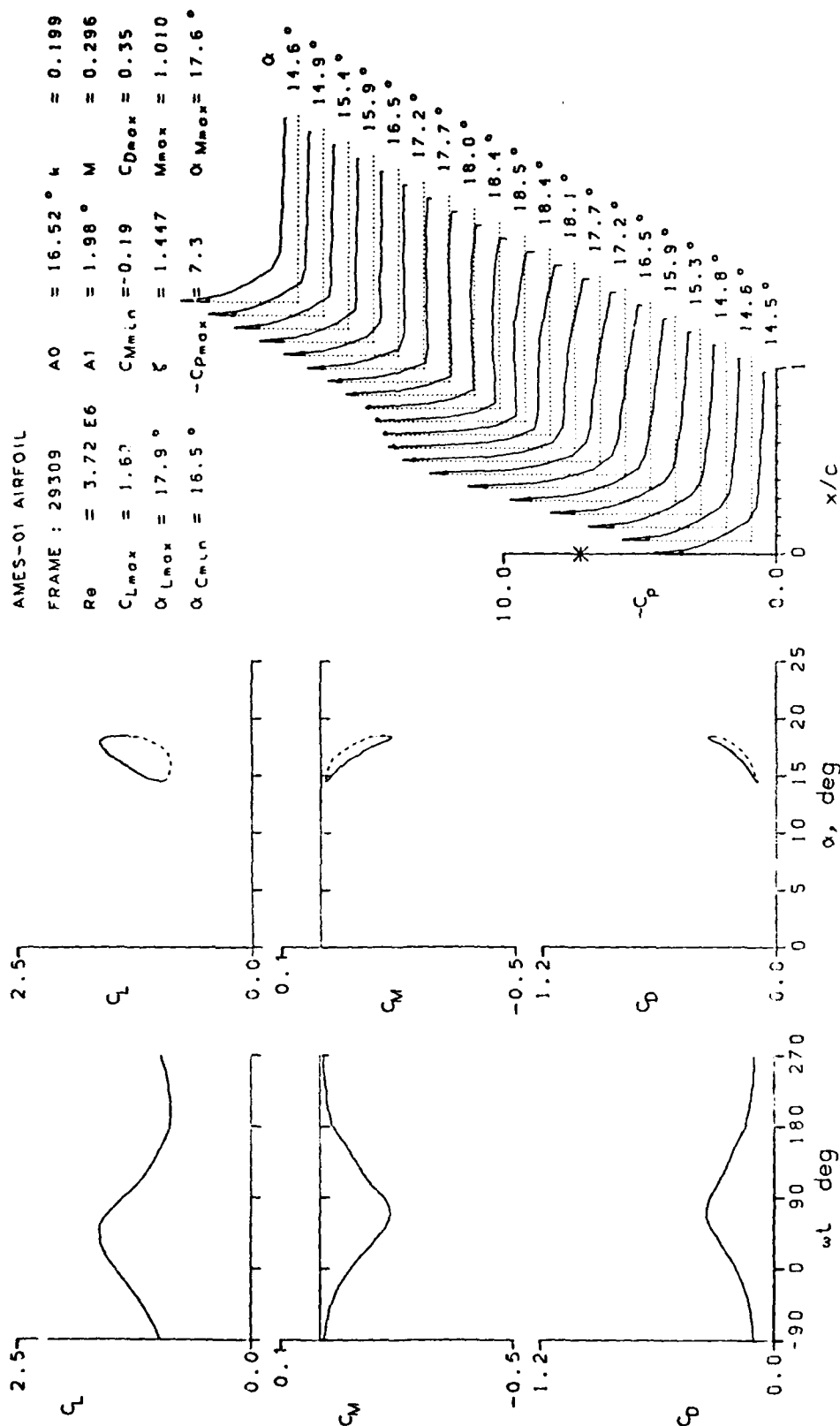


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 29317 $A_0 = 14.81^\circ$ $k = 0.102$
 $Re = 0.47 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.035$
 $C_{Lmax} = 2.34$ $C_{Mmin} = -0.33$ $C_{Dmax} = 0.88$
 $\alpha_{Lmax} = 20.5^\circ$ $\xi = 0.405$ $M_{max} = 0.120$
 $\alpha_{C_{min}} = 14.4^\circ$ $-C_{pmax} = 10.7$ $\alpha_{M_{max}} = 17.8^\circ$

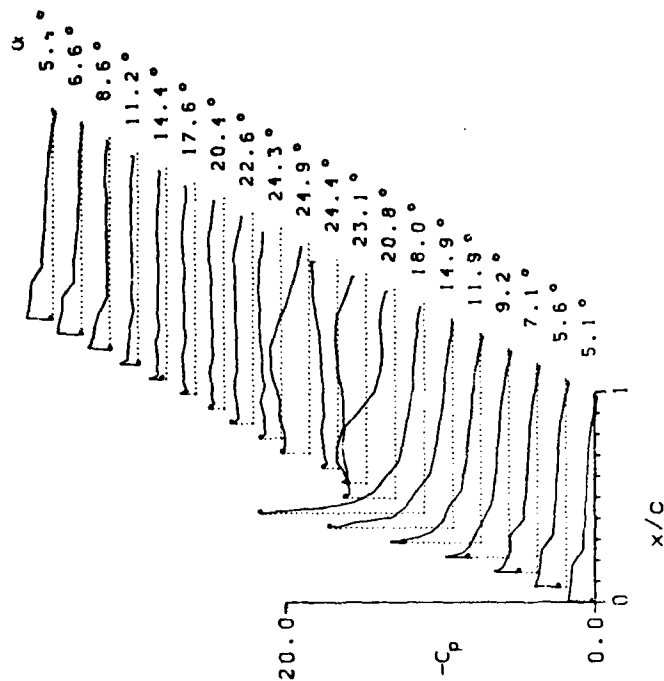
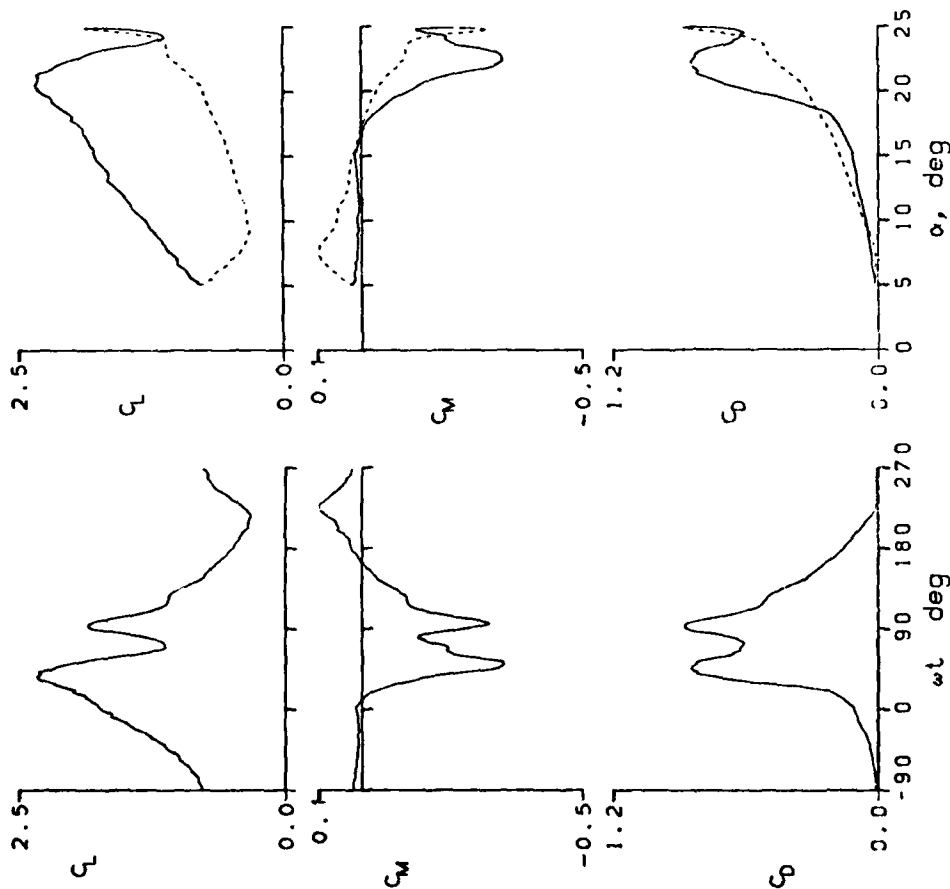


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 30019 $A_0 = 14.93^\circ$ $k = 0.010$
 $Re = 3.86 E6$ $A_1 = 9.87^\circ$ $M = 0.298$
 $C_{Lmax} = 1.62$ $C_{Mmin} = -0.15$ $C_{Dmax} = 0.38$
 $\alpha_{Lmax} = 15.8^\circ$ $\xi = 0.024$ $M_{max} = 1.192$
 $\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 15.4^\circ$

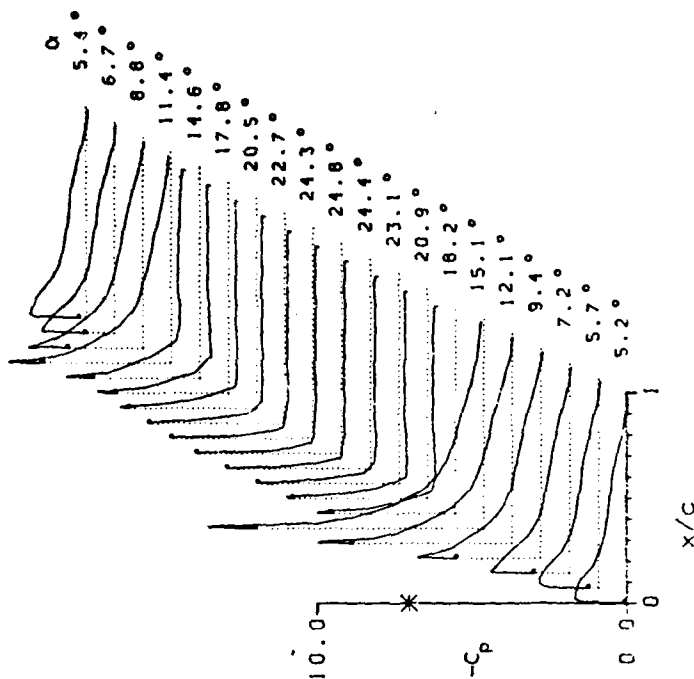
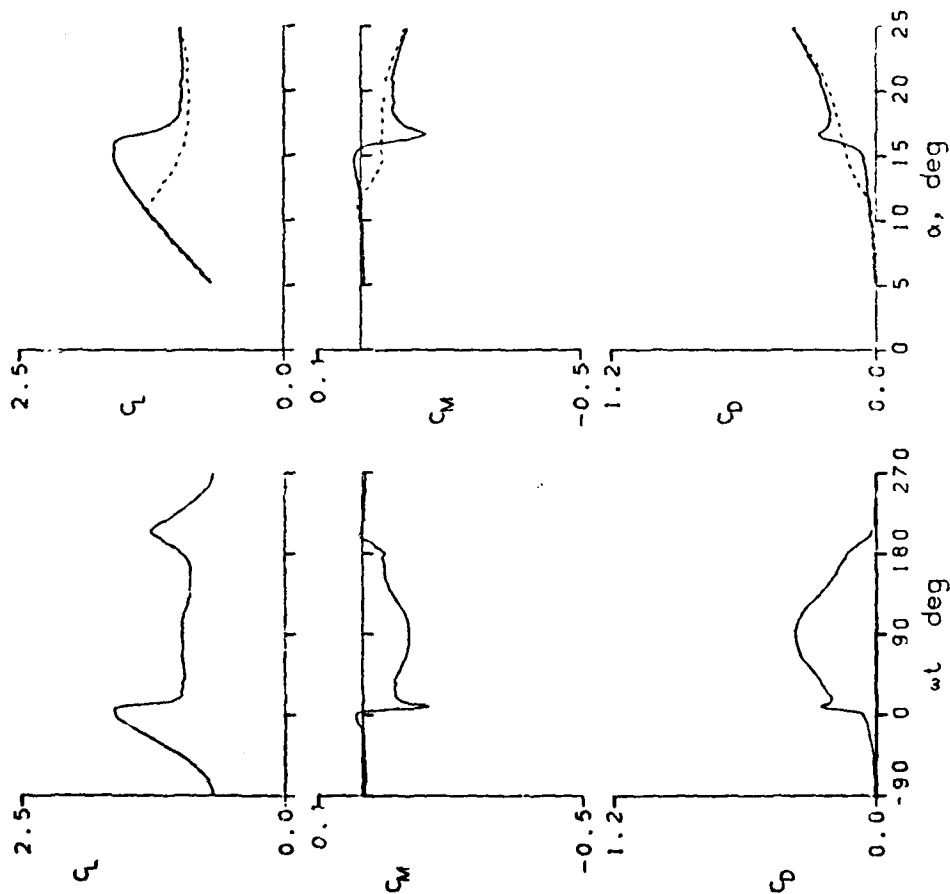


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 30020 $A_0 = 14.94^\circ$ $\mu = 0.010$
 $Re = 3.83 \text{ E} 6$ $A_1 = 9.88^\circ$ $M = 0.298$
 $C_{Lmax} = 1.64$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.38$
 $\alpha_{Lmax} = 15.7^\circ$ $\xi = 0.023$ $M_{max} = 1.203$
 $\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 15.4^\circ$

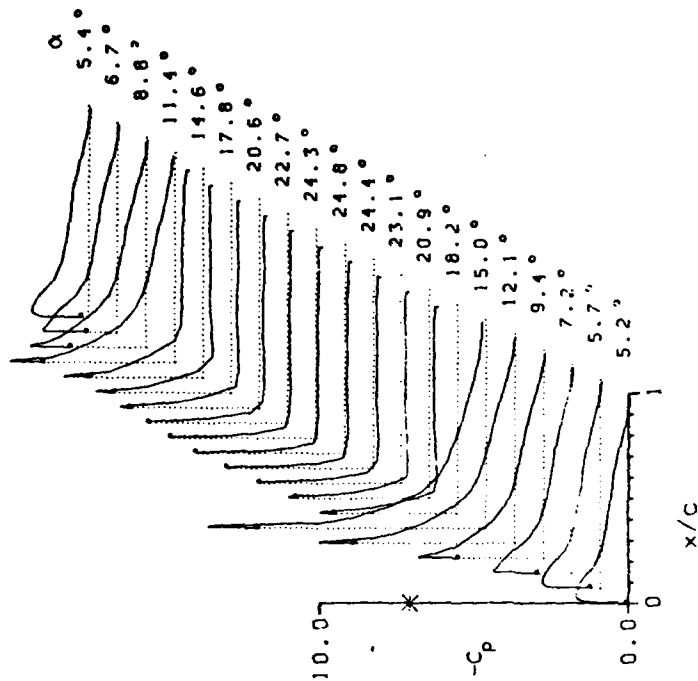
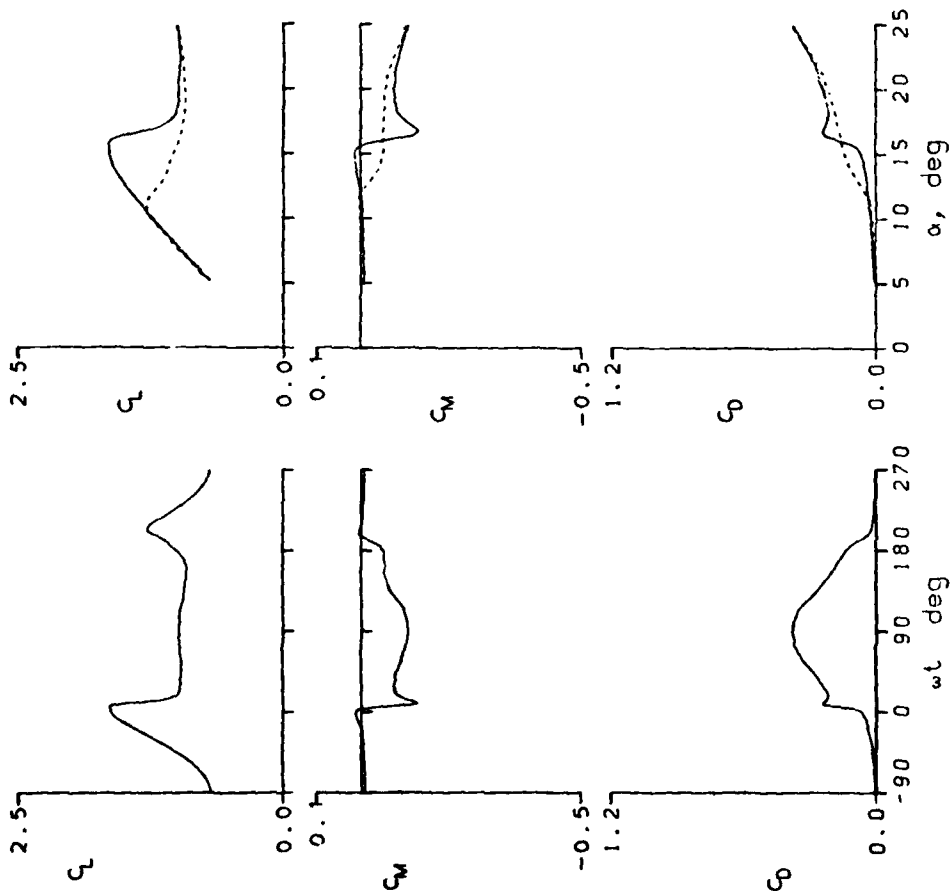


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 30105 $A_0 = 9.82^\circ$ $k = 0.010$
 $Re = 3.84 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.301$
 $C_{Lmax} = 1.61$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.23$
 $\alpha_{Lmax} = 14.5^\circ$ $\xi = -0.013$ $M_{max} = 1.195$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 8.8$ $\alpha_{Mmax} = 15.0^\circ$

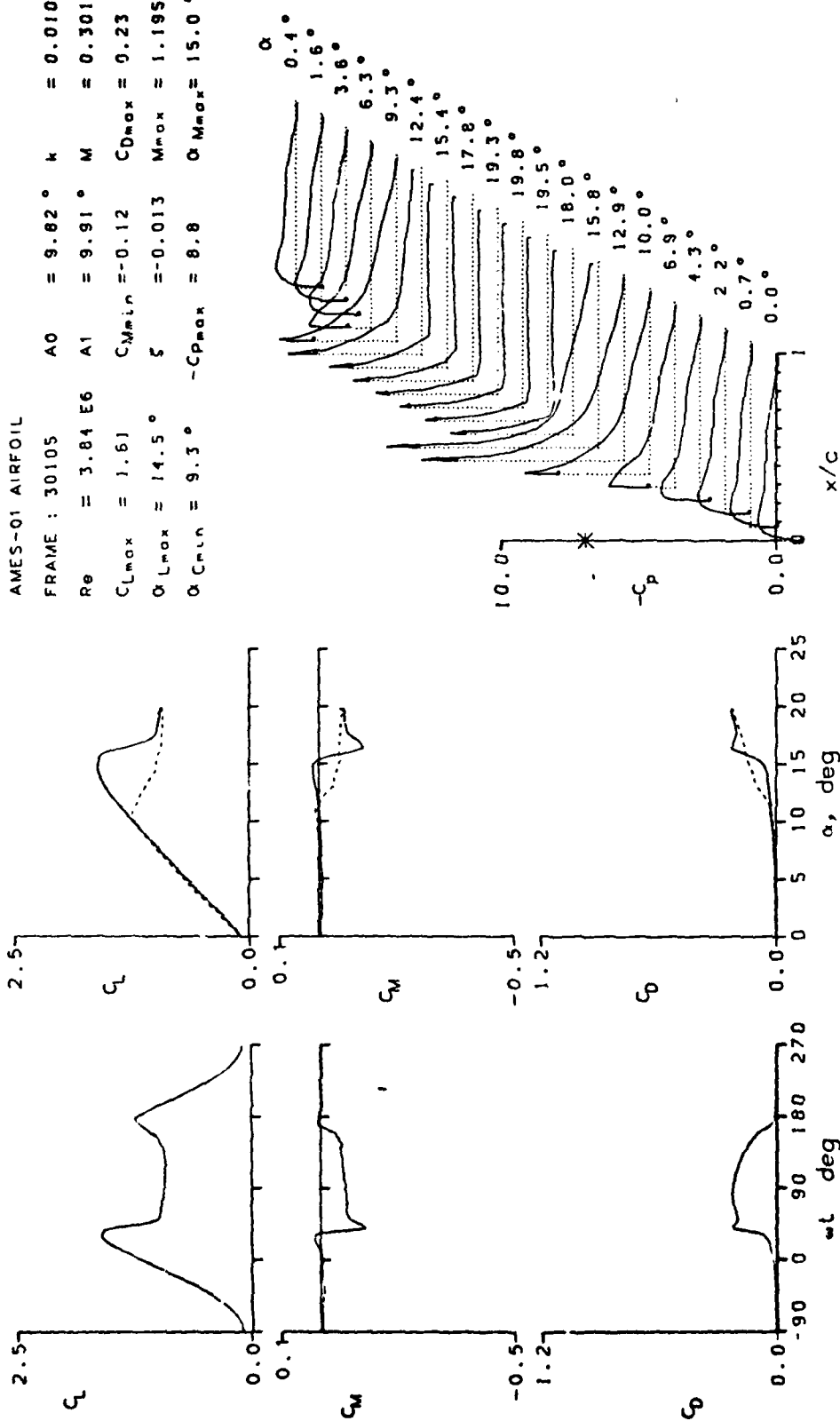


Figure 13.- Continued.

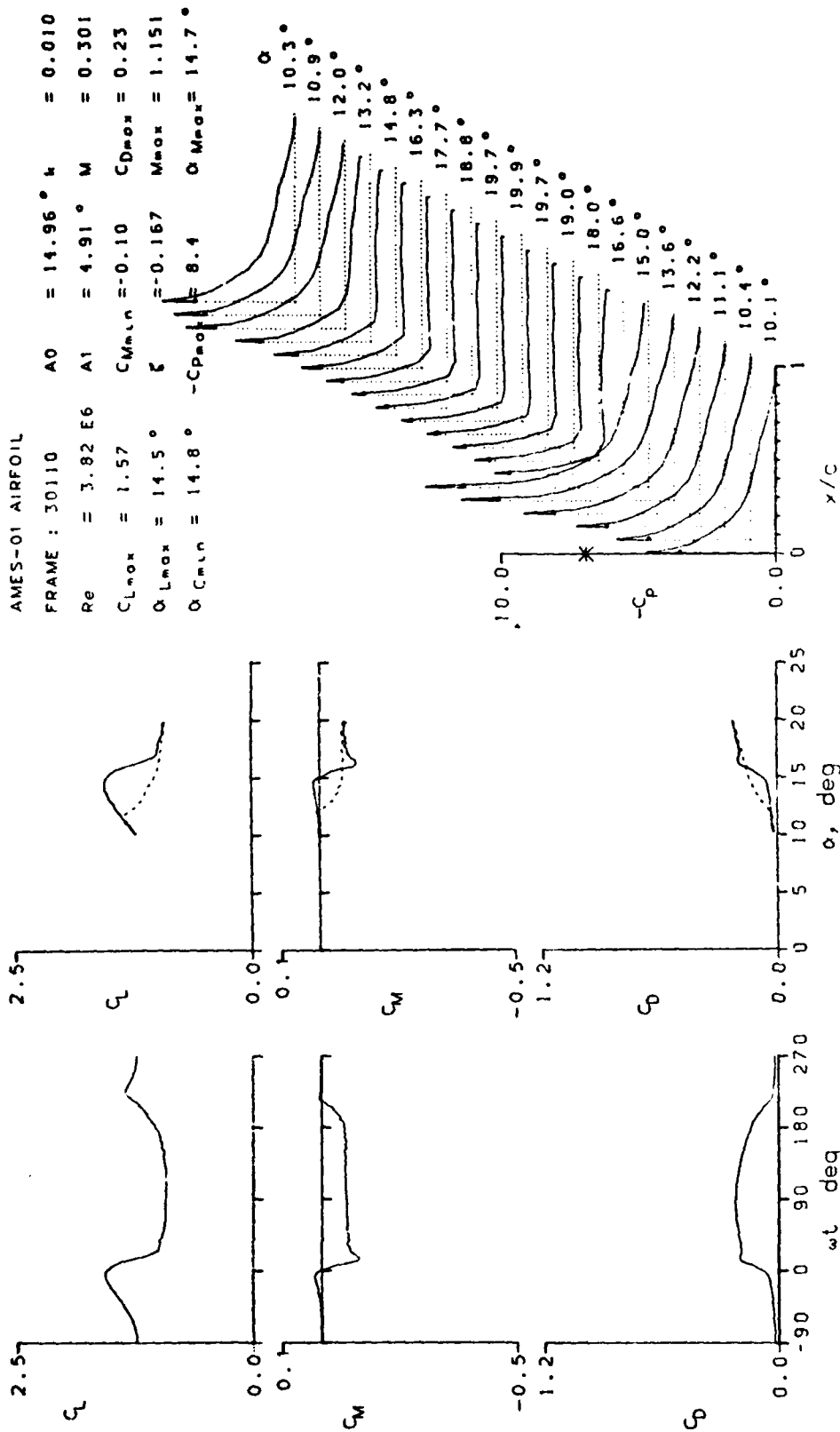


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 30119 $A_0 = 9.93^\circ$ $k = 0.010$
 $Re = 3.82 \text{ E}6$ $A_1 = 4.92^\circ$ $M = 0.300$
 $C_{Lmax} = 1.56$ $C_{Mmin} = -0.04$ $C_{Dmax} = 0.12$
 $\alpha_{Lmax} = 14.5^\circ$ $\xi = -0.096$ $M_{max} = 1.129$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{pmax} = 8.3$ $\alpha_{Mmax} = 14.6^\circ$

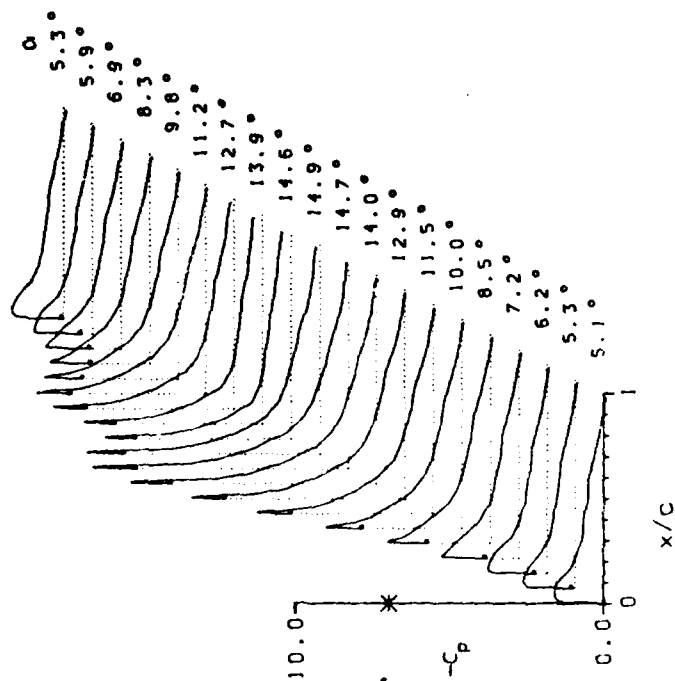
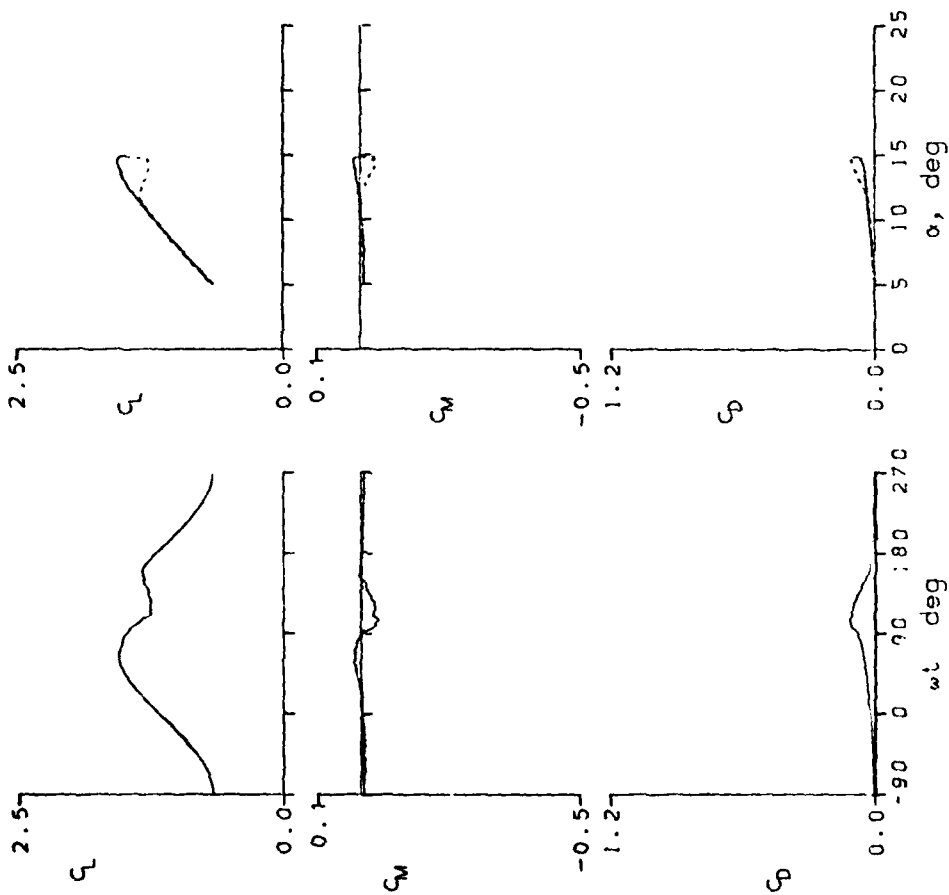


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 30201 $A_0 = 10.92^\circ$ $k = 0.010$
 $Re = 3.81 E6$ $A_1 = 4.90^\circ$ $M = 0.301$
 $C_{Lmax} = 1.57$ $C_{Dmin} = -0.09$ $C_{Dmax} = 0.17$
 $\alpha_{Lmax} = 14.4^\circ$ $\xi = -0.222$ $M_{max} = 1.137$
 $\alpha_{Cmin} = 10.7^\circ$ $-C_{pmax} = 8.3$ $\alpha_{Mmax} = 14.5^\circ$

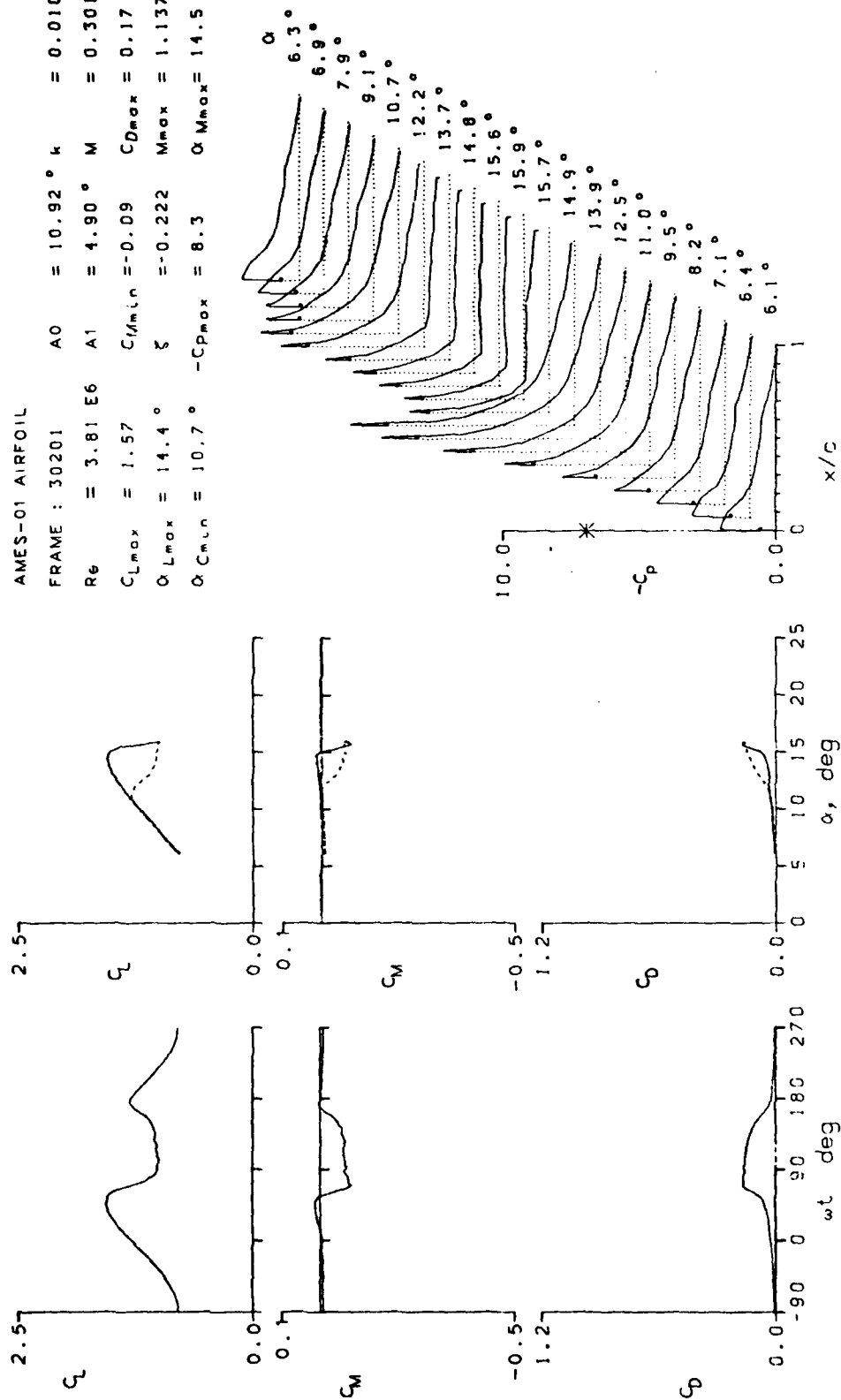


Figure 13.- Continued.

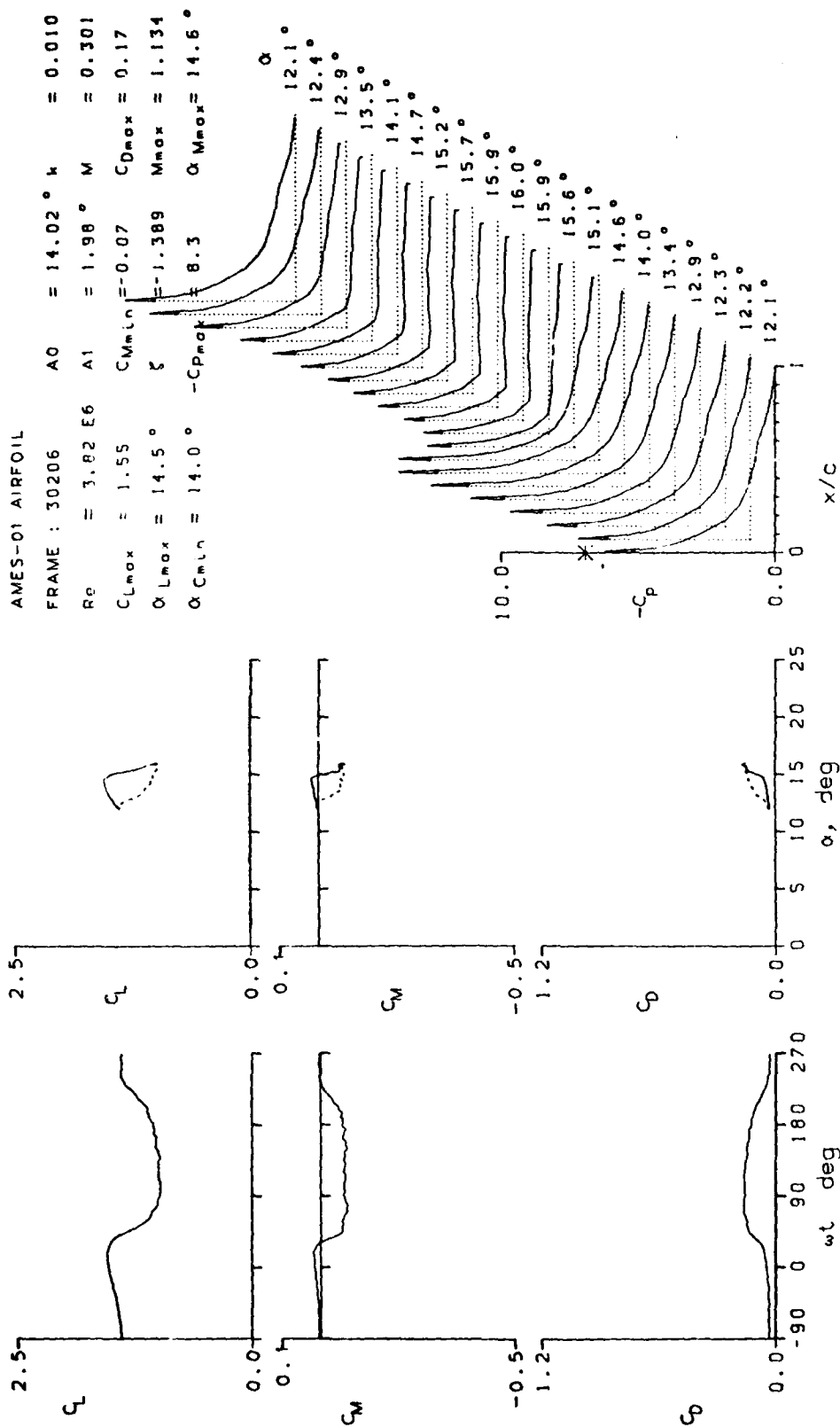


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 3021S $A_0 = 7.30^\circ$ $k = 0.010$
 $Re = 2.42 \text{ E}6$ $A_1 = 10.00^\circ$ $M = 0.183$
 $C_{Lmax} = 1.66$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.20$
 $\alpha_{Lmax} = 16.5^\circ$ $\xi = -0.068$ $M_{max} = 0.654$
 $\alpha_{Cmin} = 6.8^\circ$ $-C_{pmax} = 9.9$ $\alpha_{Mmax} = 16.5^\circ$

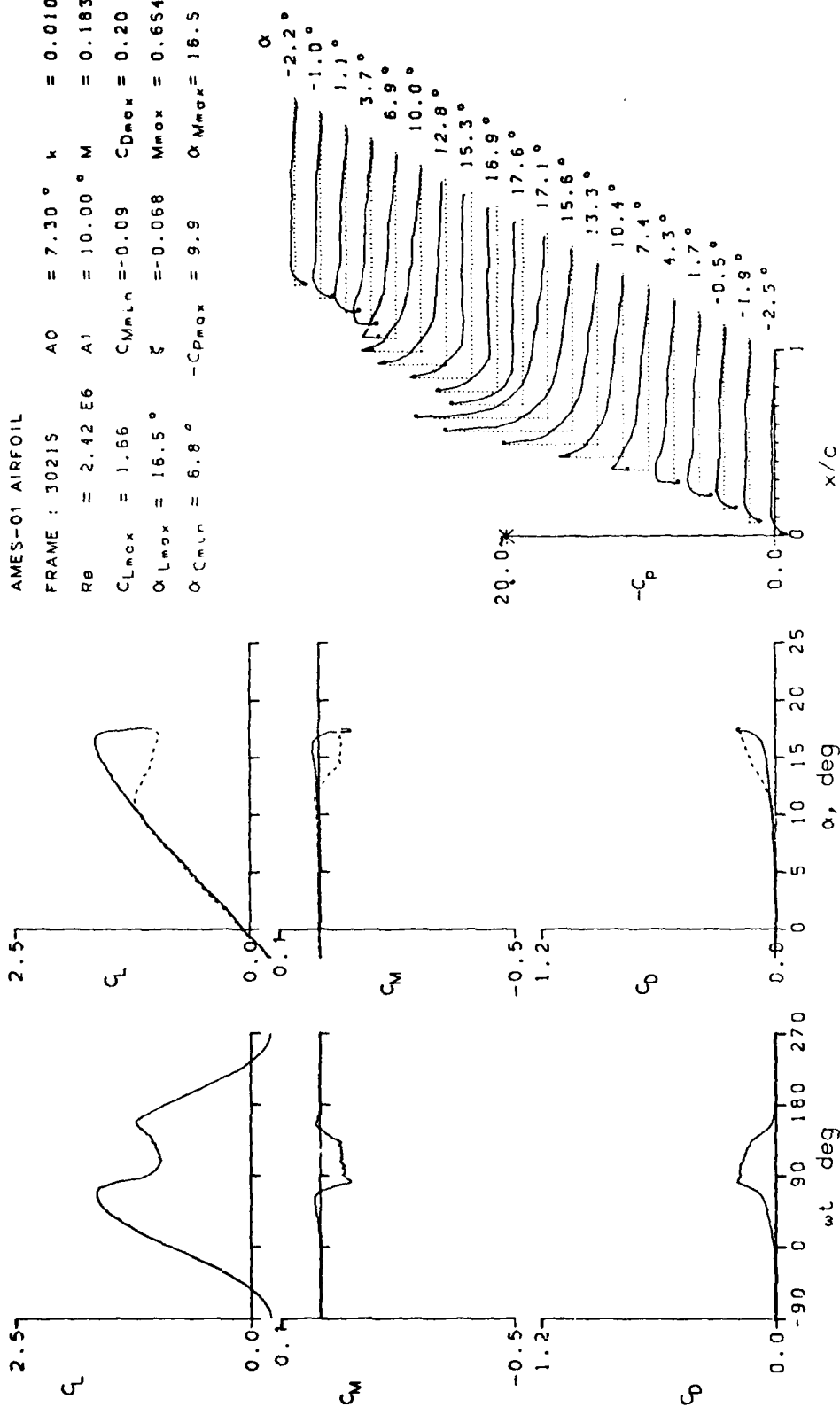


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31102 $A_0 = 9.80^\circ$ $k = 0.025$
 $Re = 3.88 \text{ E} 6$ $A_1 = 9.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.82$ $C_{Mmin} = -0.17$ $C_{Dmax} = 0.32$
 $\alpha_{Lmax} = 16.8^\circ$ $\zeta = 0.073$ $M_{max} = 1.268$
 $\alpha_{Cmin} = 9.2^\circ$ $-C_{Dmax} = 9.4$ $\alpha_{Mmax} = 16.1^\circ$

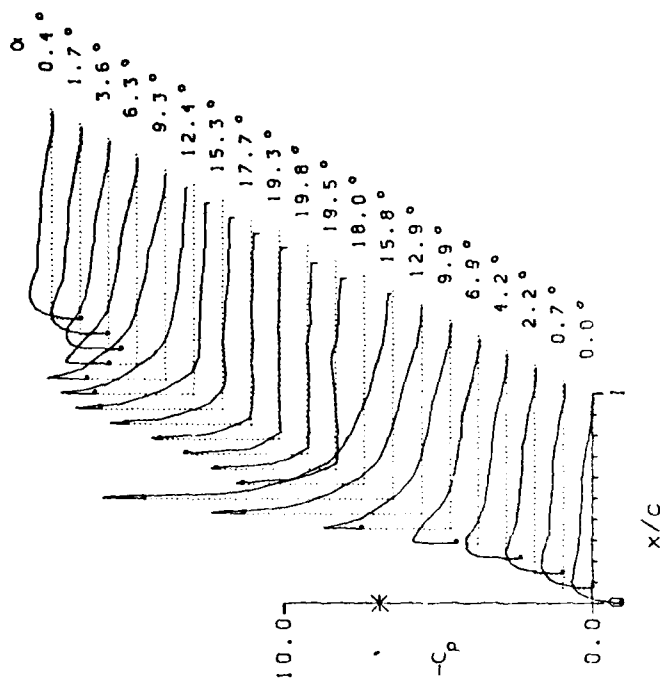
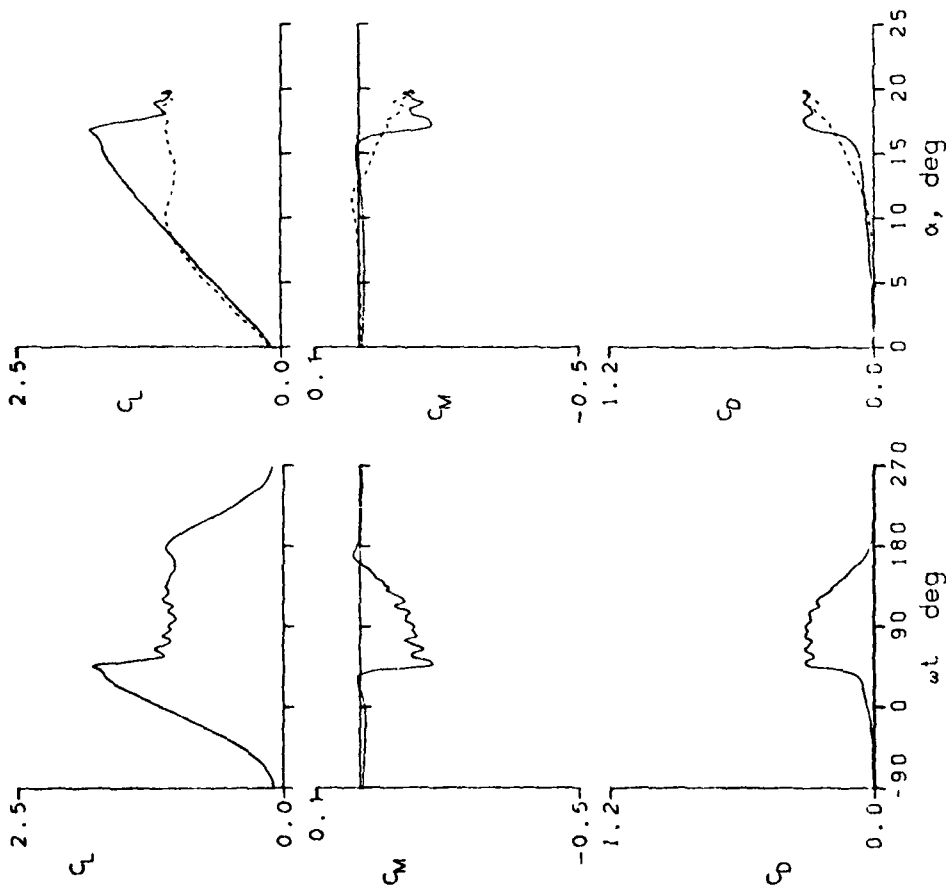


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31104 $A_0 = 9.78^\circ$ $k = 0.049$
 $Re = 3.86 E6$ $A_1 = 9.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.96$ $C_{Mmin} = -0.20$ $C_{Dmax} = 0.37$
 $\alpha_{Lmax} = 17.7^\circ$ $\xi = 0.091$ $M_{max} = 1.305$
 $\alpha_{Cmin} = 9.2^\circ$ $-C_{Dmax} = 9.7$ $\alpha_{Mmax} = 16.4^\circ$

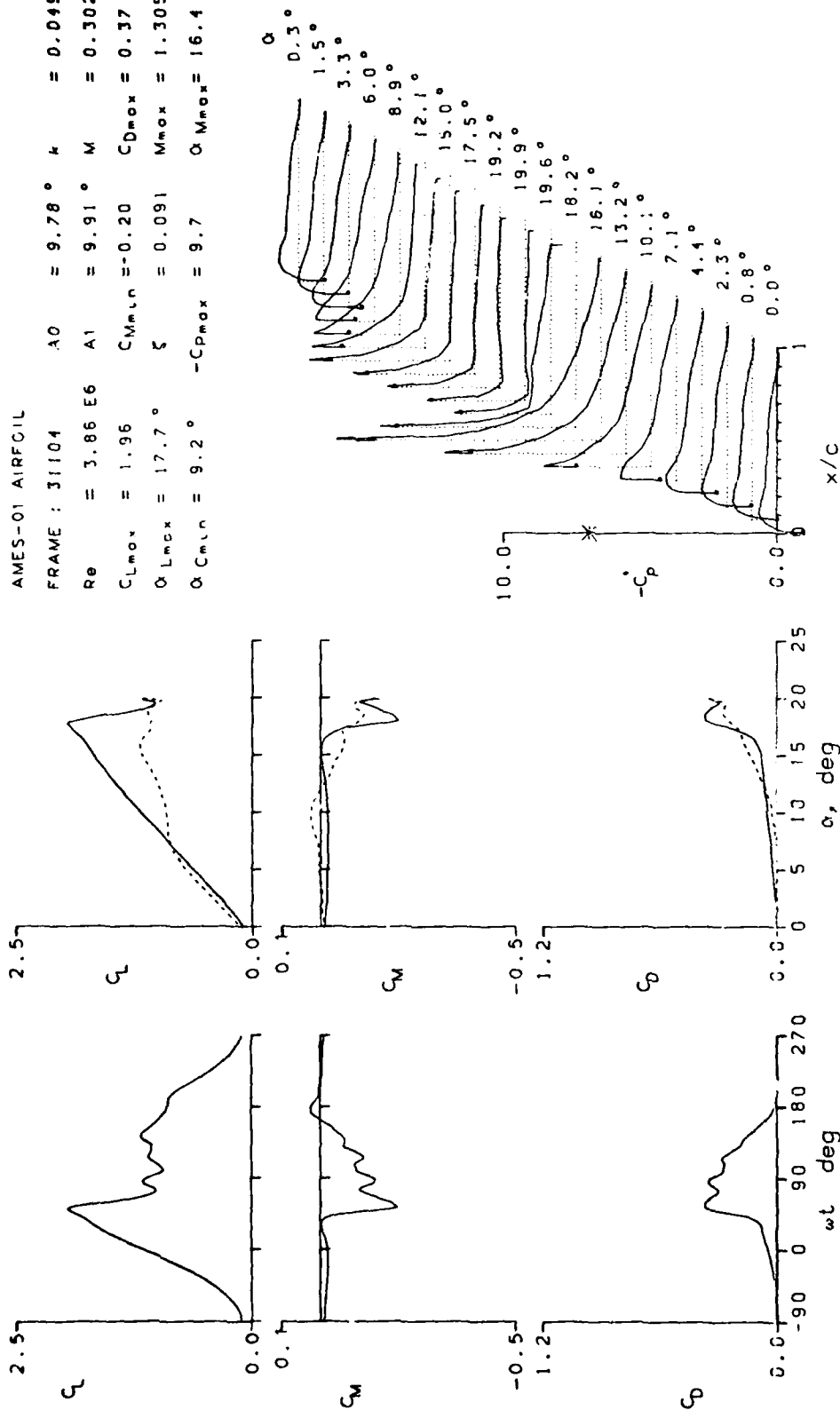


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 31110	A0 = 9.92°	k = 0.147
Re = 3.84 E6	A1 = 9.91°	M = 0.302
CLmax = 2.19	CMmin = -0.36	CDmax = 0.62
αLmax = 19.8°	ξ = 0.278	Mmax = 1.332
αCMmin = 9.5°	-CPmax = 9.9	αMmax = 17.7°

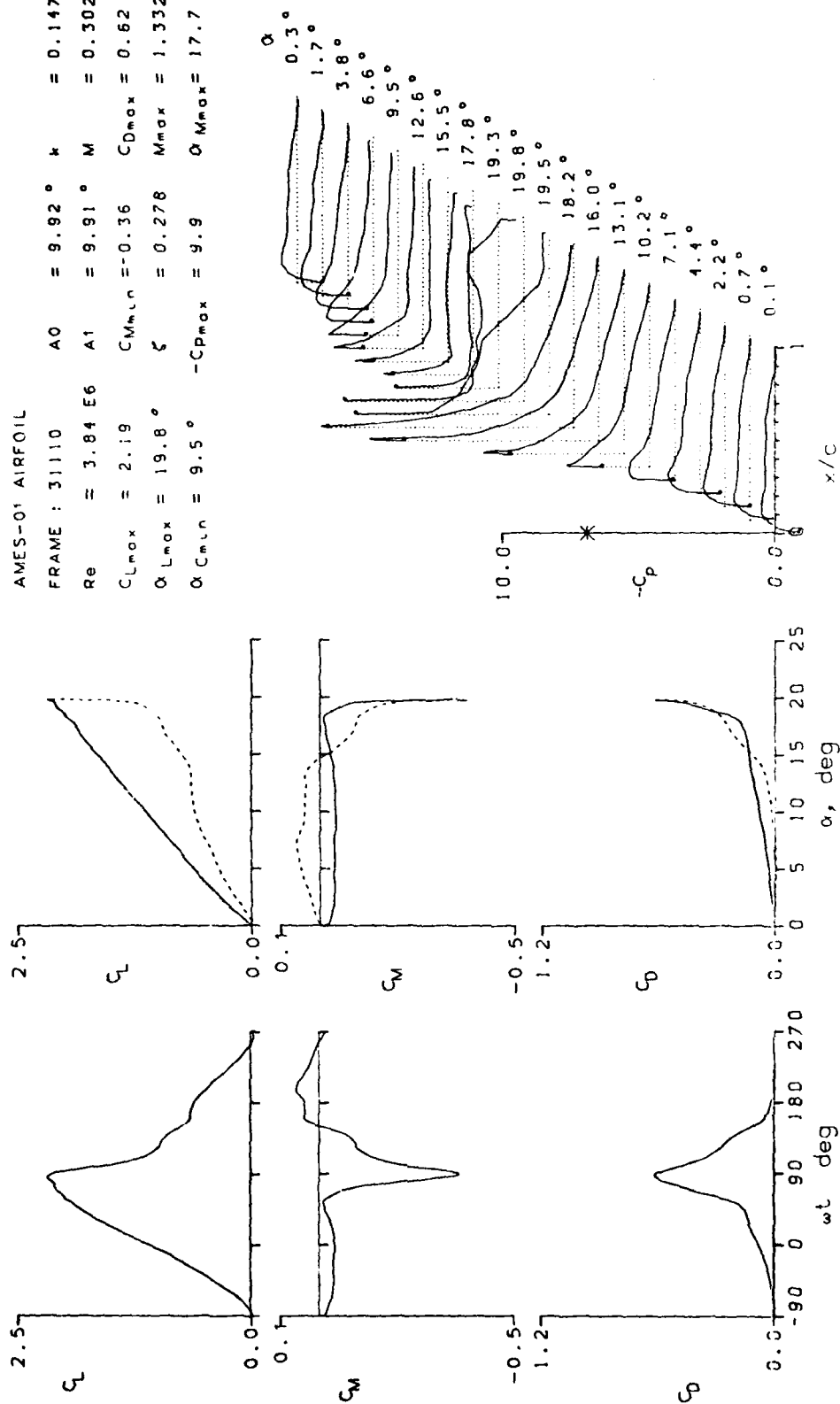


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31112 $A_0 = 9.91^\circ$ $k = 0.147$
 $Re = 3.83 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.302$
 $C_{Lmax} = 2.19$ $C_{Mmin} = -0.35$ $C_{Dmax} = 0.62$
 $\alpha_{Lmax} = 19.8^\circ$ $\xi = 0.282$ $M_{max} = 1.332$
 $\alpha_{Cmin} = 9.4^\circ$ $-C_{pmax} = 9.9$ $\alpha_{Mmax} = 17.7^\circ$

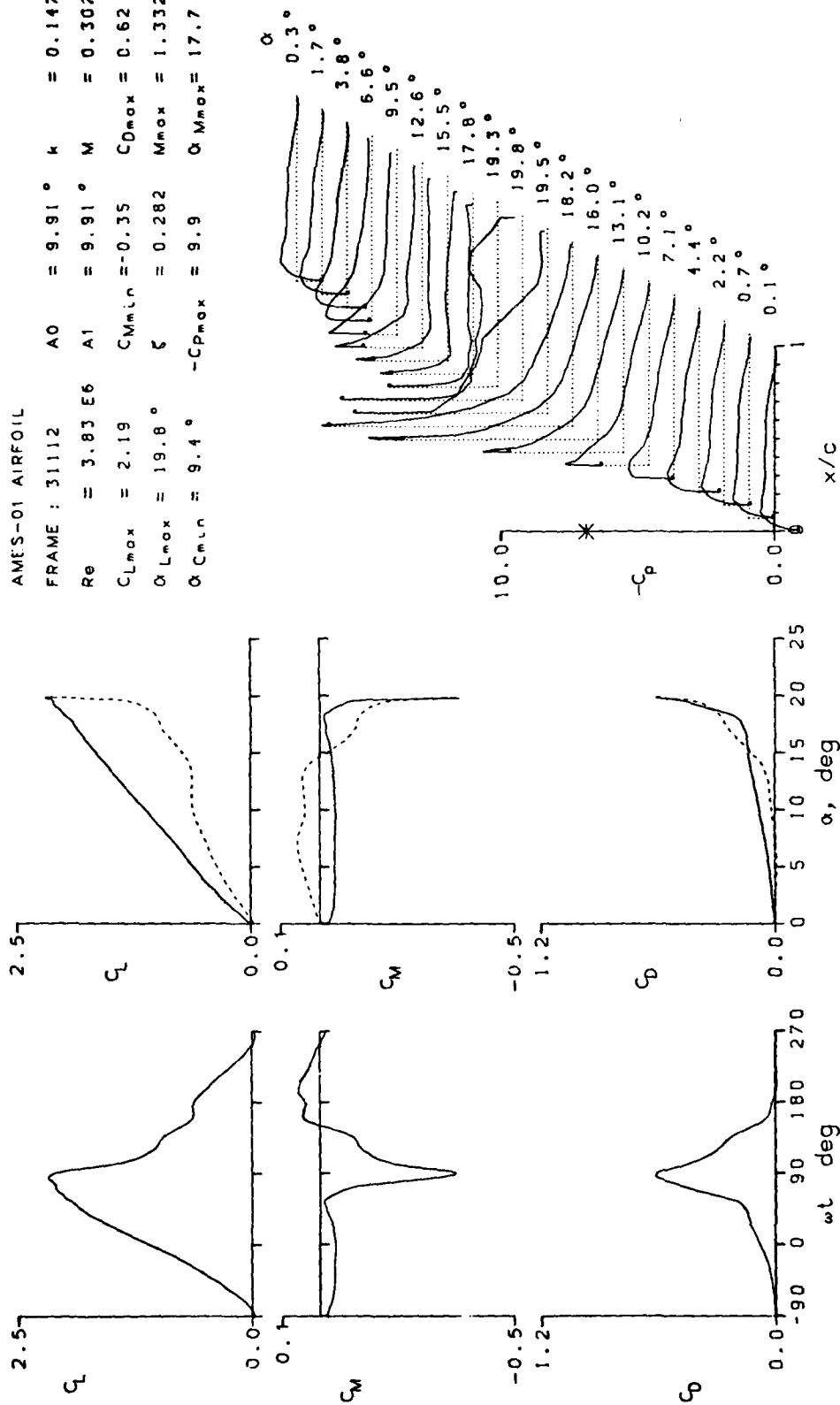


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31119 $A_0 = 4.90^\circ$ $k = 0.024$
 $Re = 3.86 \text{ E}6$ $A_1 = 10.02^\circ$ $M = 0.303$
 $C_{Lmax} = 1.61$ $C_{Mmin} = -0.04$ $C_{Dmax} = 0.11$
 $\alpha_{Lmax} = 14.6^\circ$ $\xi = 0.047$ $M_{max} = 1.206$
 $\alpha_{Cmin} = 4.4^\circ$ $-C_{Dmax} = 8.8$ $\alpha_{Mmax} = 14.8^\circ$

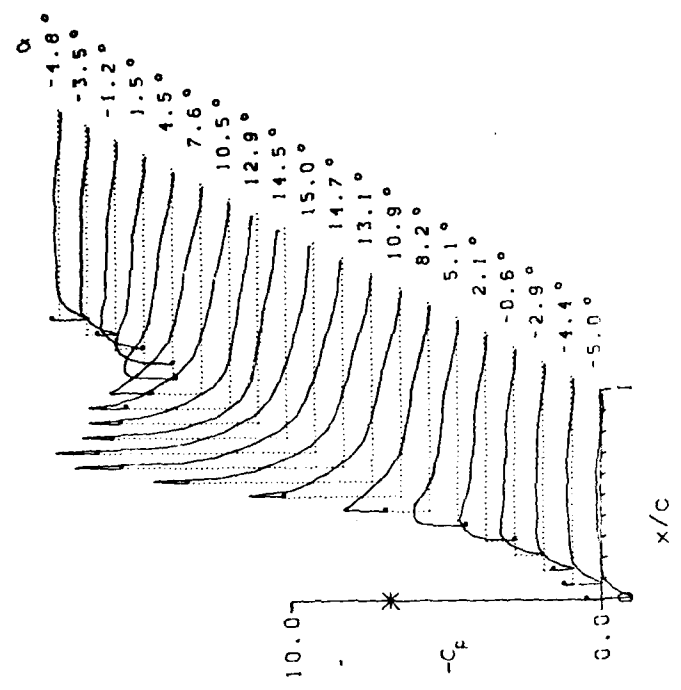
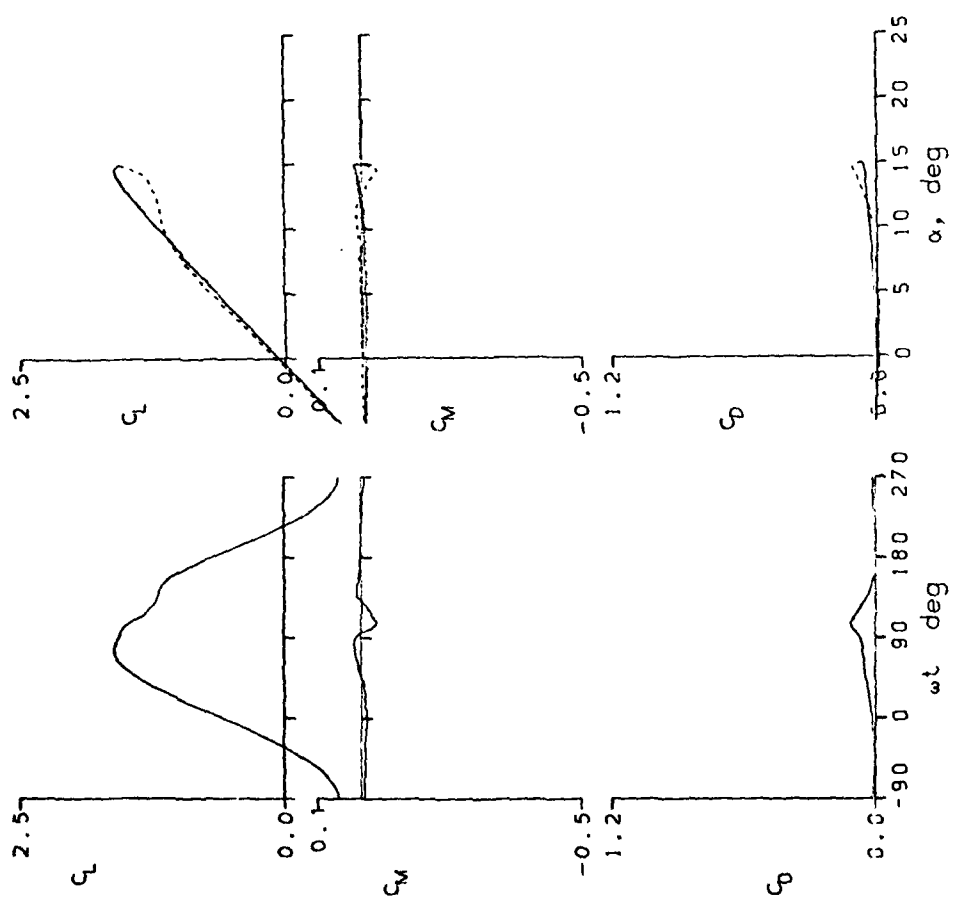


Figure 13.- Continued.

ANES-01 AIRFOIL
 FRAME : 31121 $A_0 = 4.81^\circ$ $k = 0.049$
 $Re = 3.83 \text{ E}6$ $A_1 = 10.08^\circ$ $M = 0.302$
 $C_{Lmax} = 1.66$ $C_{Mmin} = -0.02$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 14.8^\circ$ $\zeta = 0.118$ $M_{max} = 1.231$
 $\alpha_{Cmin} = 4.3^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 14.9^\circ$

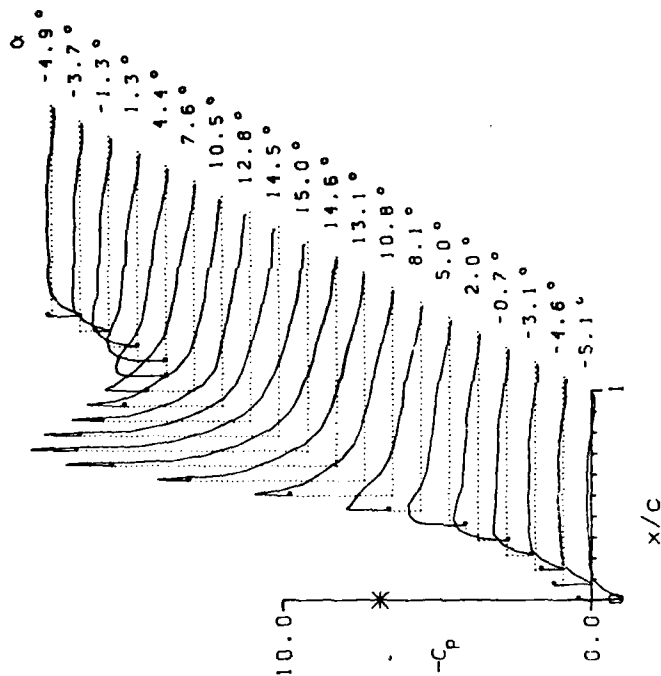
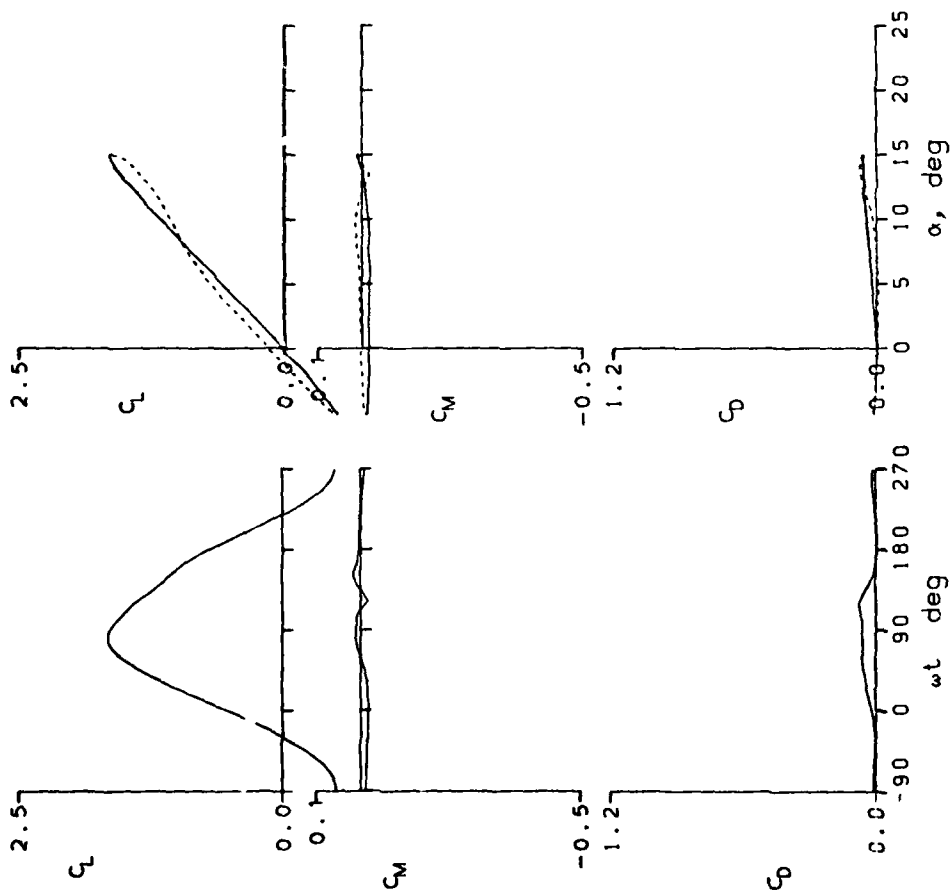


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31123 $A_0 = 4.84^\circ$ $k = 0.098$
 $Re = 3.82 \text{ E } 6$ $A_1 = 10.06^\circ$ $M = 0.303$
 $C_{Lmax} = 1.70$ $C_{Mmin} = -0.03$ $C_{Dmax} = 0.09$
 $\alpha_{Lmax} = 15.1^\circ$ $\xi = 0.288$ $M_{max} = 1.272$
 $\alpha_{Cmin} = 4.3^\circ$ $-C_{Dmax} = 9.4$ $\alpha_{Mmax} = 15.0^\circ$

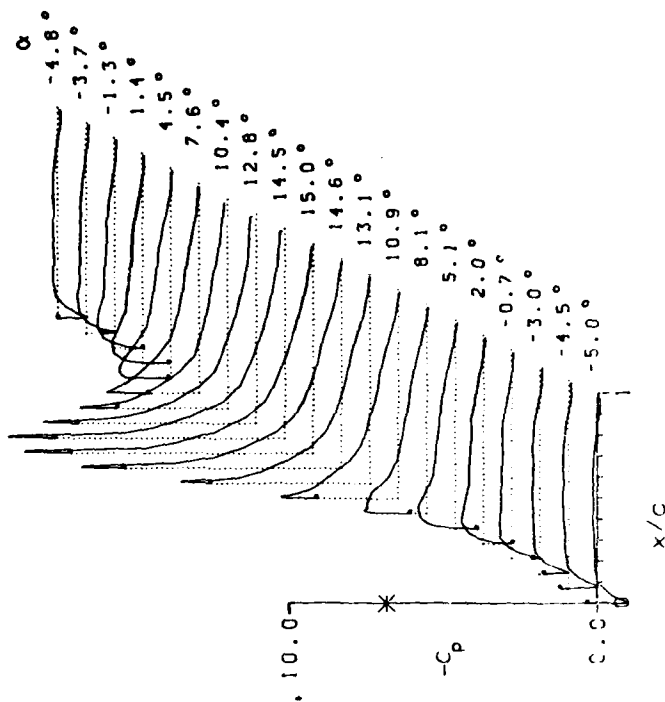
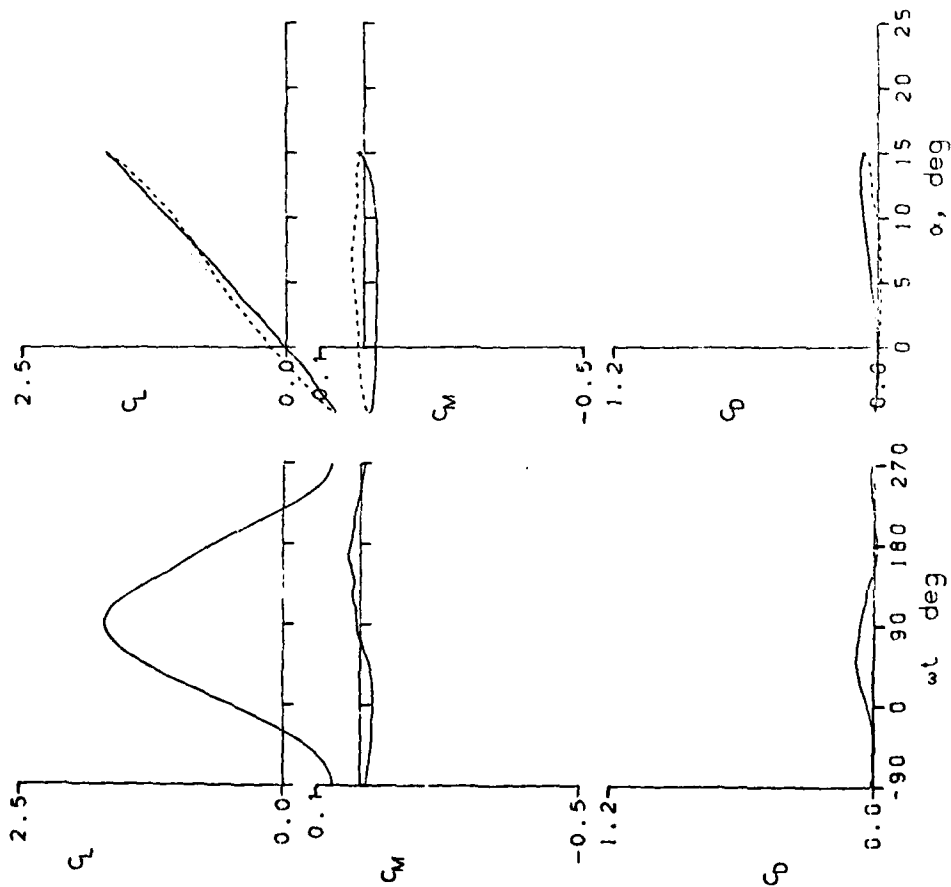


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31201 $A_0 = 4.82^\circ$ $k = 0.146$
 $Re = 3.82 \text{ E}6$ $A_1 = 10.06^\circ$ $M = 0.303$
 $C_{Lmax} = 1.73$ $C_{Mmin} = -0.05$ $C_{Dmax} = 0.10$
 $\alpha_{Lmax} = 14.9^\circ$ $\xi = 0.44$ $M_{max} = 1.297$
 $\alpha_{Cmin} = 4.4^\circ$ $-C_{Pmax} = 9.6$ $\alpha_{Mmax} = 14.7^\circ$

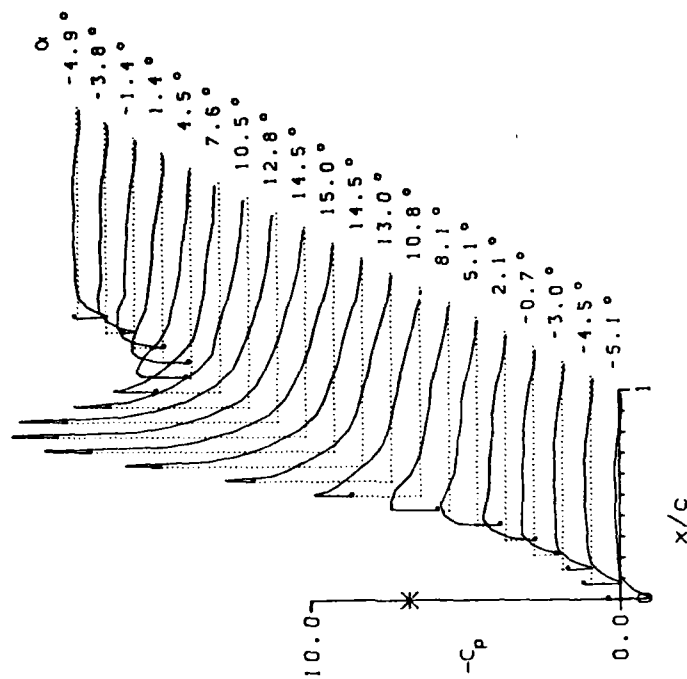
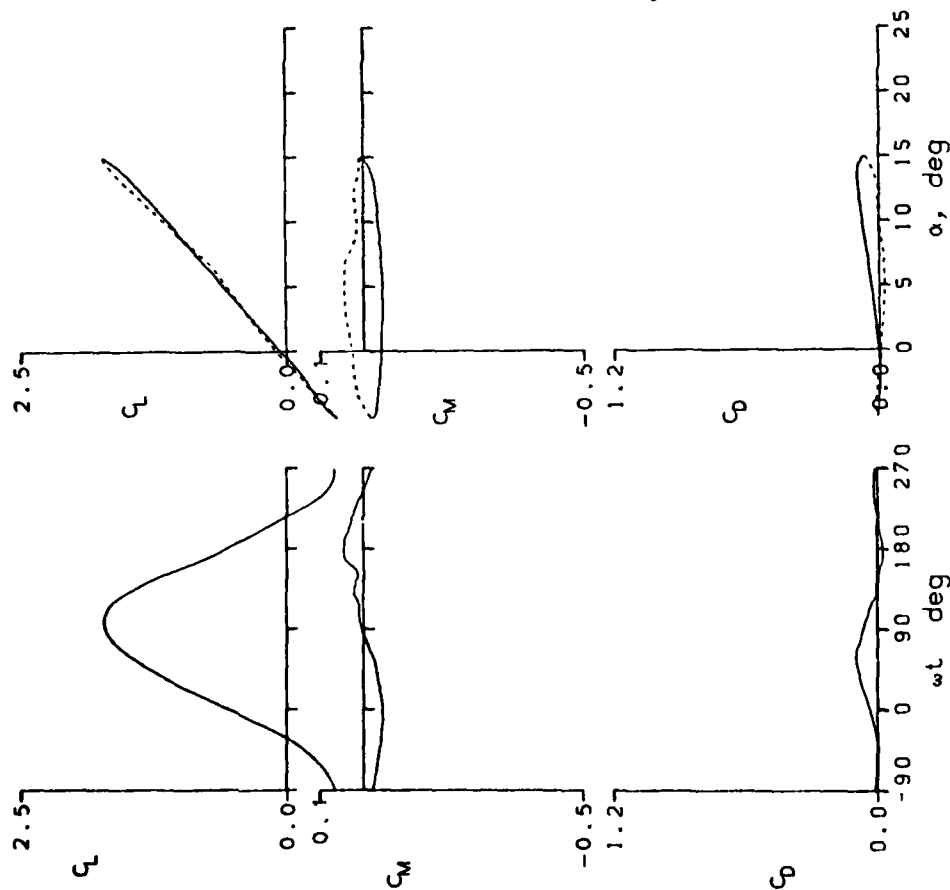


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31209 $A_0 = 14.82^\circ$ $k = 0.099$
 $Re = 2.42 E6$ $A_1 = 9.91^\circ$ $M = 0.184$
 $C_{Lmax} = 2.53$ $C_{Mmin} = -0.39$ $C_{Dmax} = 0.98$
 $\alpha_{Lmax} = 23.4^\circ$ $\xi = 0.174$ $M_{max} = 0.938$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 17.6$ $\alpha_{Mmax} = 22.5^\circ$

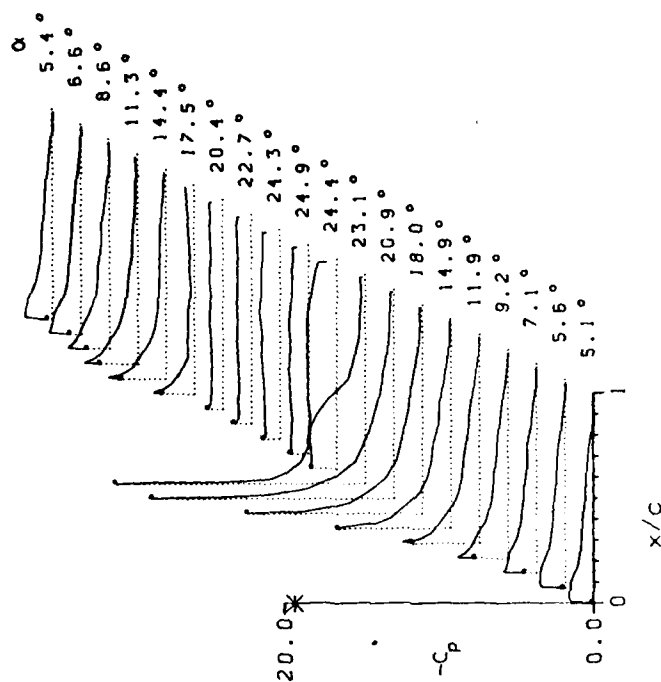
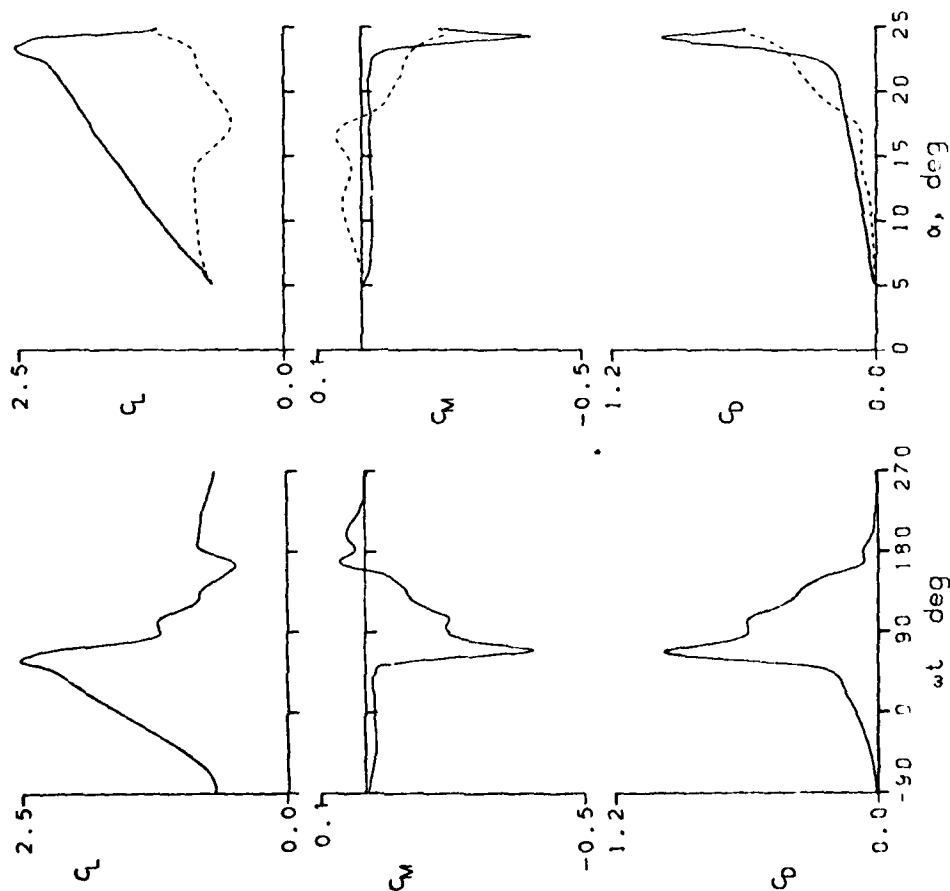


Figure 13.- Continued.

AMES-01 AIRFOIL

FRAME : 31215	A0 = 7.26°	h = 0.049
Re = 2.43 E6	A1 = 10.02°	M = 0.184
CLmax = 1.76	CMmin = -0.04	CDmax = 0.12
αLmax = 17.3°	ξ = 0.073	Mmax = 0.712
αCMmin = 6.7°	-CDmax = 11.3	αMmax = 17.5°

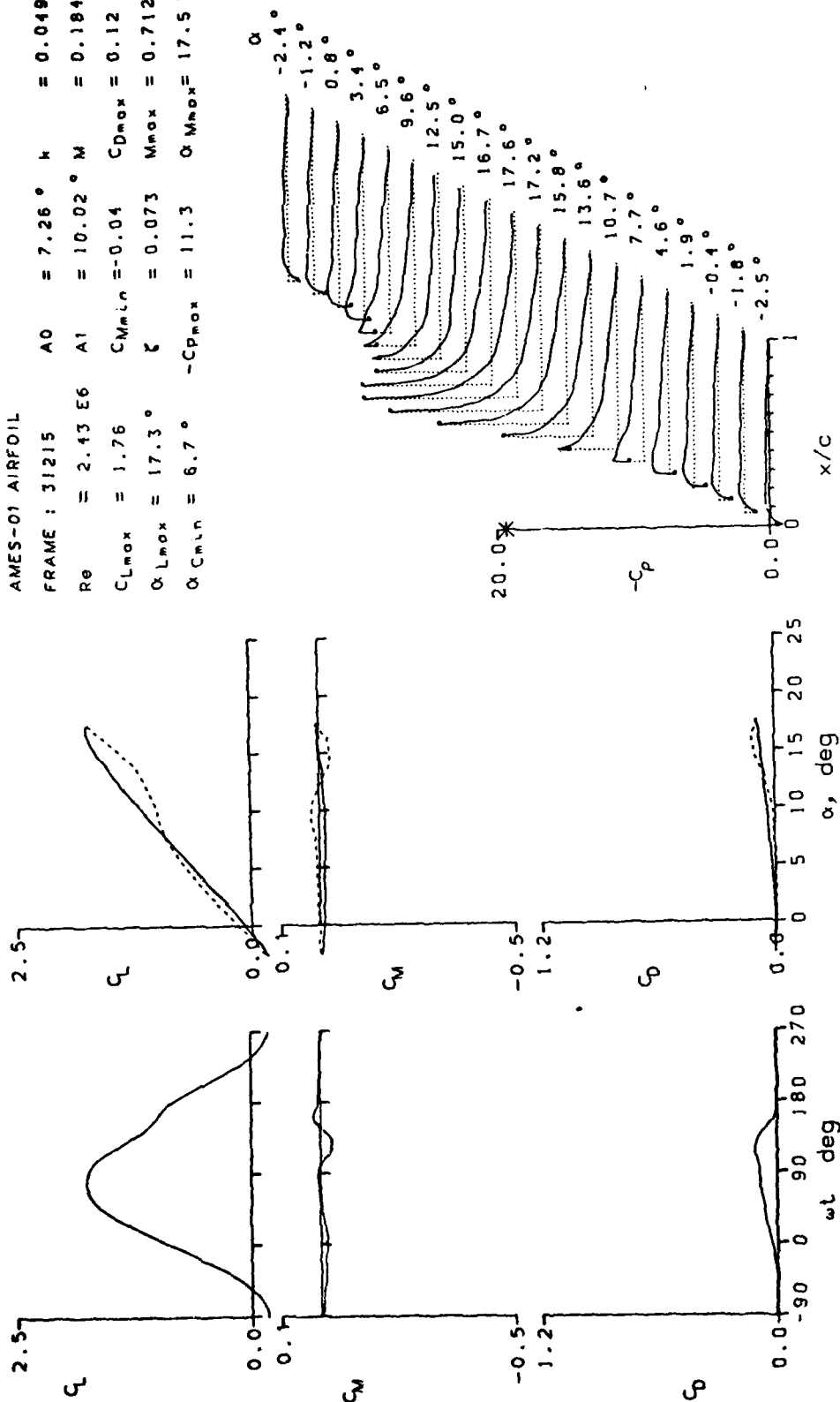


Figure 13.- Continued.

AMES-01 AIRFOIL
 FRAME : 31217 A0 = 7.27° k = 0.197
 Re = 2.42 E6 A1 = 10.01° M = 0.185
 CLmax = 1.80 CMmin = -0.06 CDmax = 0.13
 αLmax = 17.5° ξ = 0.574 Mmax = 0.727
 αCMmin = 6.6° -CPmax = 11.7 αMmax = 17.5°

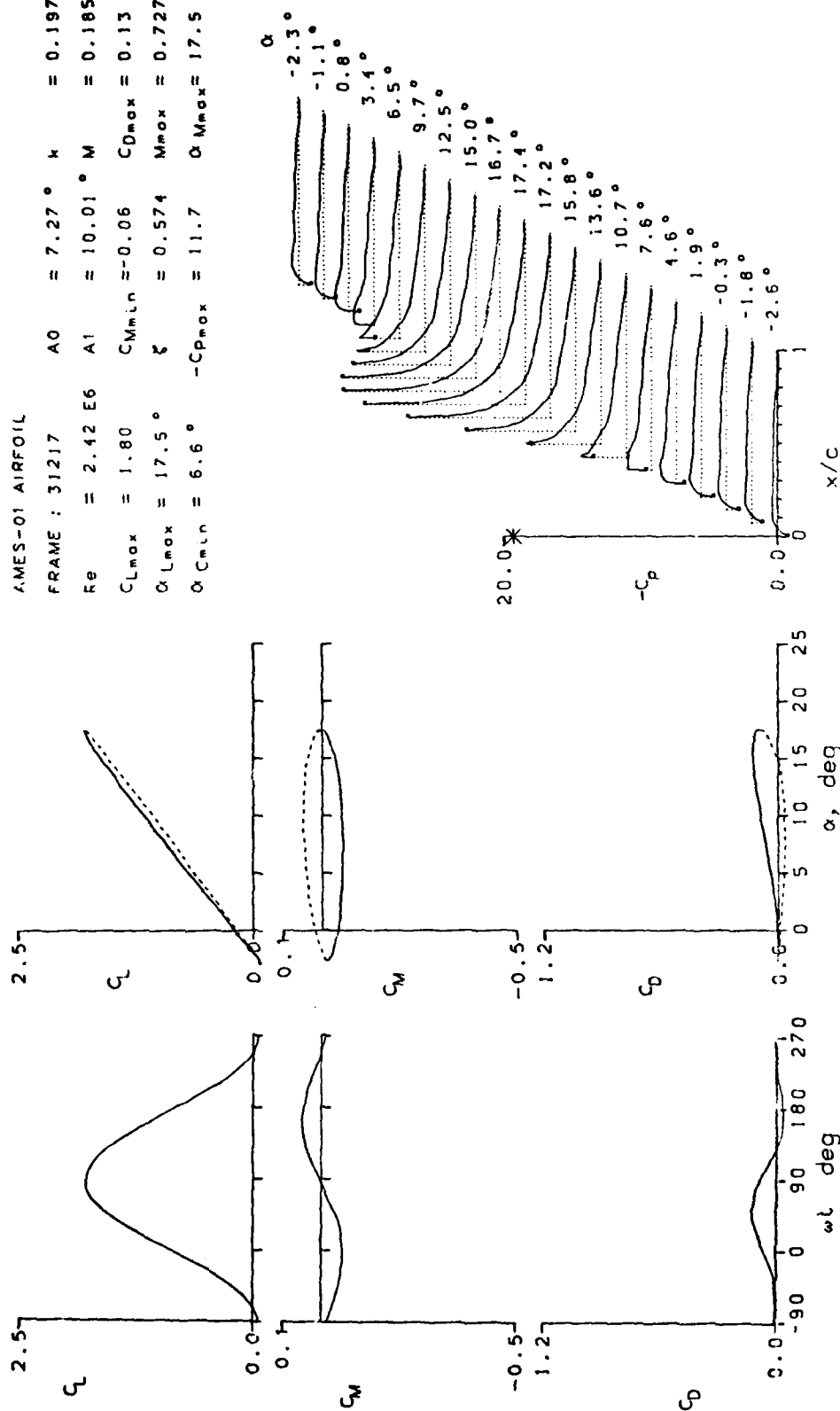


Figure 13.- Continued.

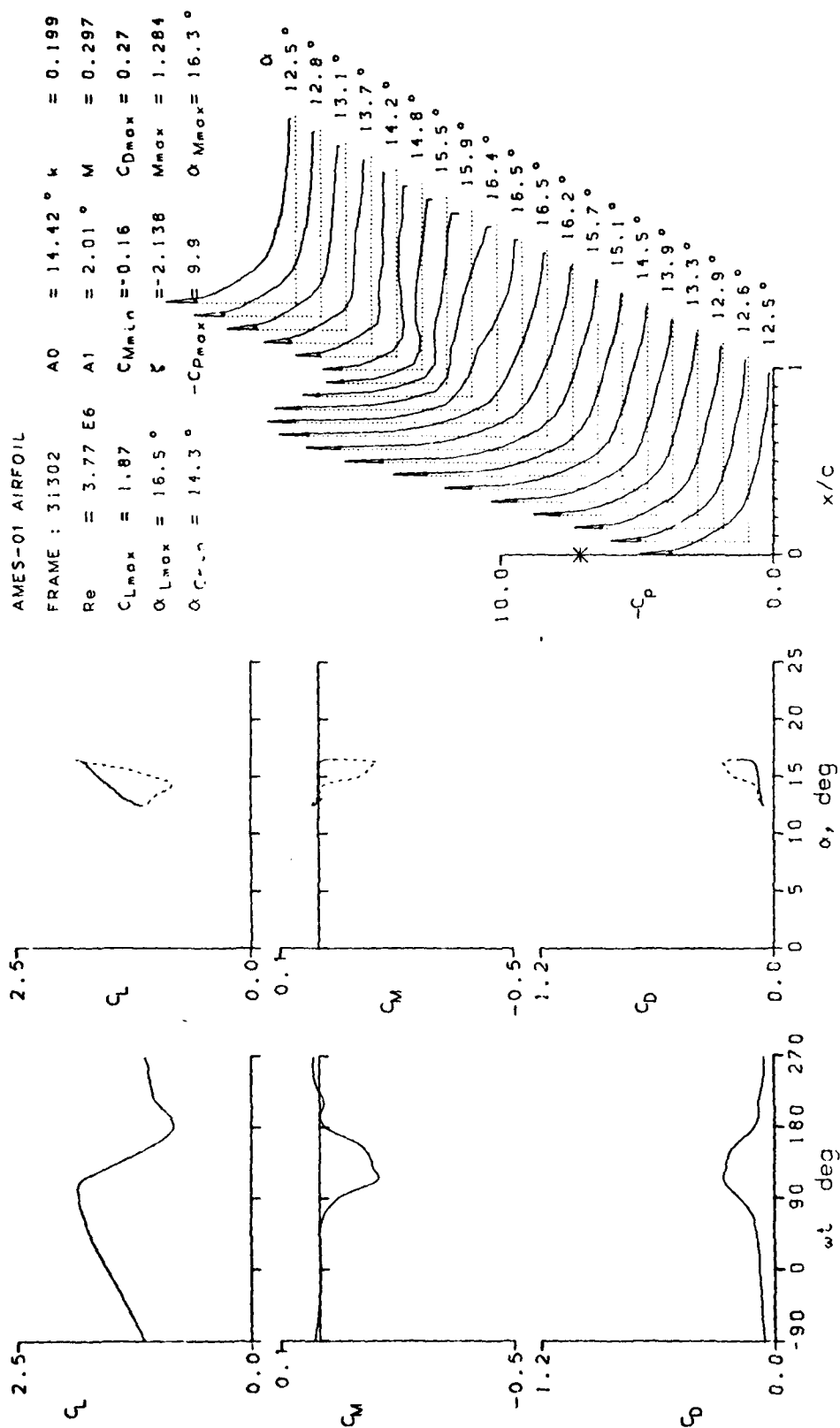


Figure 13.- Continued.

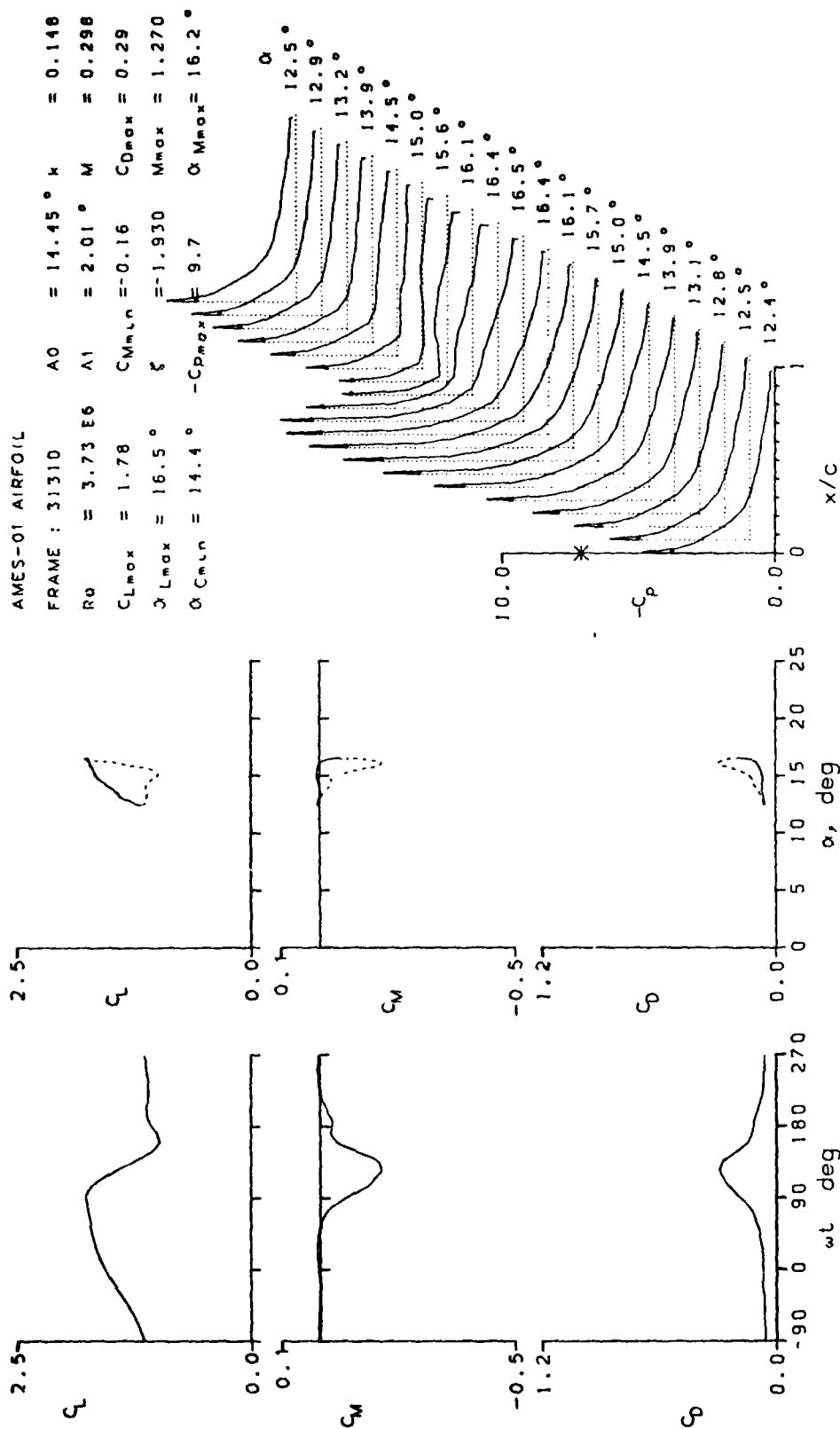


Figure 13.- Concluded.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 16019 $A_0 = 14.79^\circ$ $k = 0.101$
 $Re = 0.45 E6$ $A_1 = 9.90^\circ$ $M = 0.036$
 $C_{Lmax} = 2.16$ $C_{Mmin} = -0.46$ $C_{Dmax} = 0.99$
 $\alpha_{Lmax} = 24.7^\circ$ $\xi = 0.513$ $M_{max} = 0.107$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 7.7$ $\alpha_{Mmax} = 13.0^\circ$

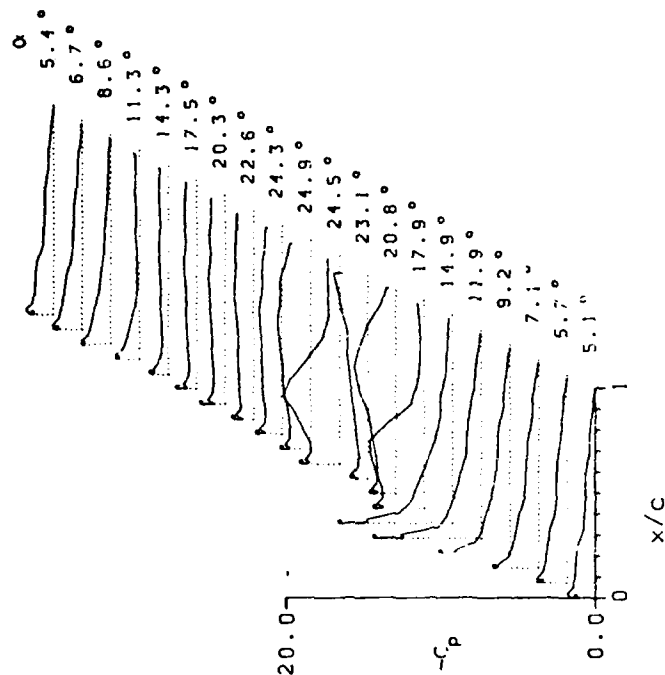
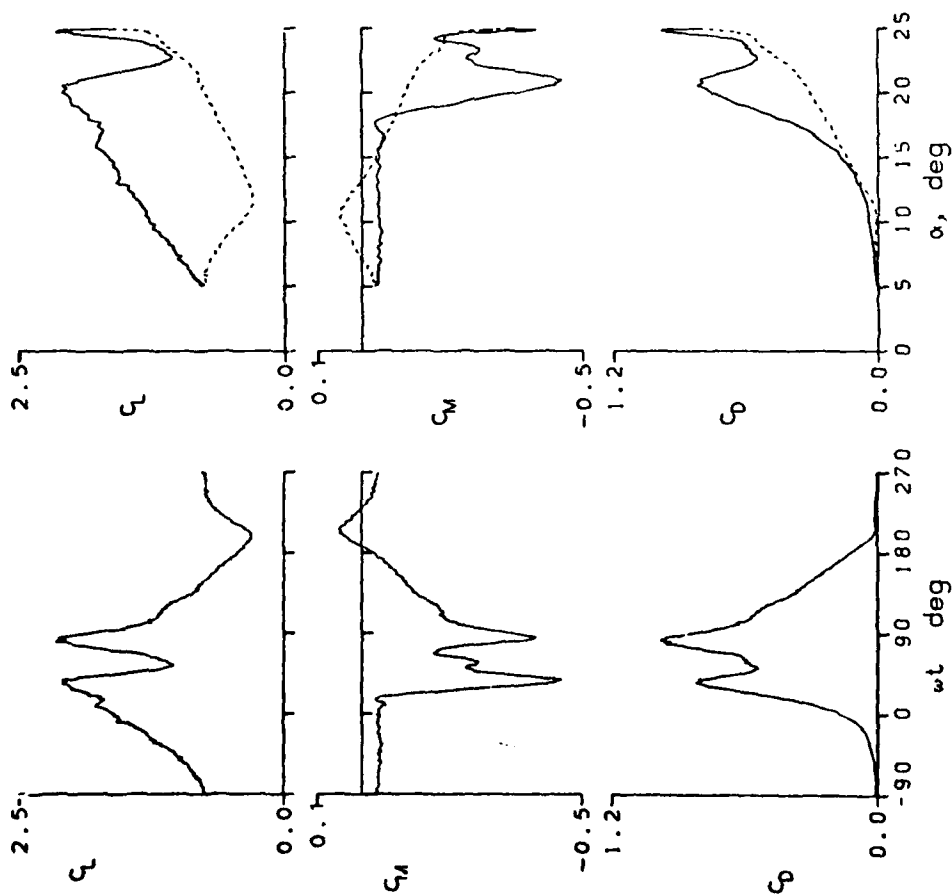


Figure 14.- Dynamic data for Wortmann FX-098 airfoil.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 16105 $A_0 = 14.80^\circ$ $k = 0.097$
 $Re = 0.99 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.074$
 $C_{Lmax} = 2.27$ $C_{Mmin} = -0.43$ $C_{Dmax} = 0.98$
 $\alpha_{Lmax} = 21.1^\circ$ $\zeta = 0.407$ $M_{max} = 0.325$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 17.5$ $\alpha_{Mmax} = 19.7^\circ$

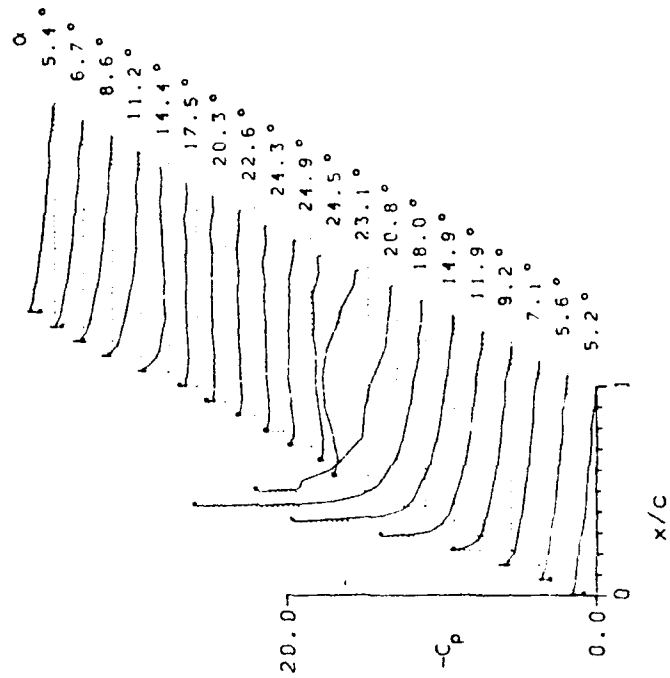
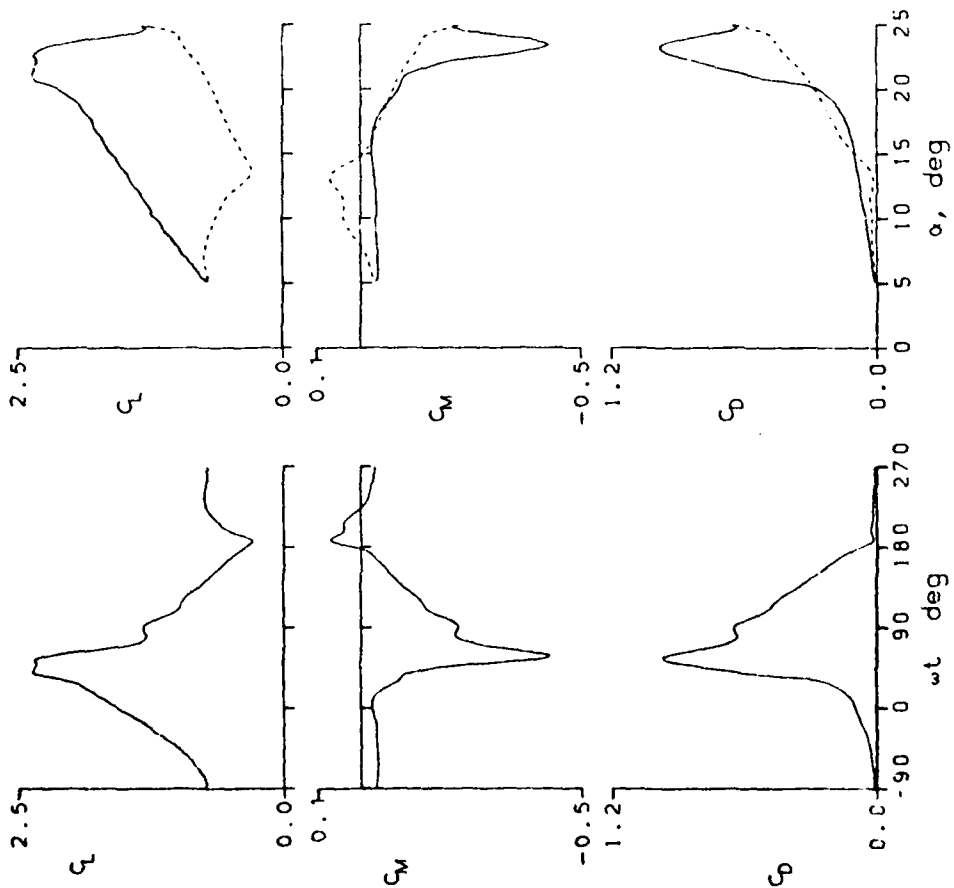


Figure 14.- Continued.

AD-A121 598

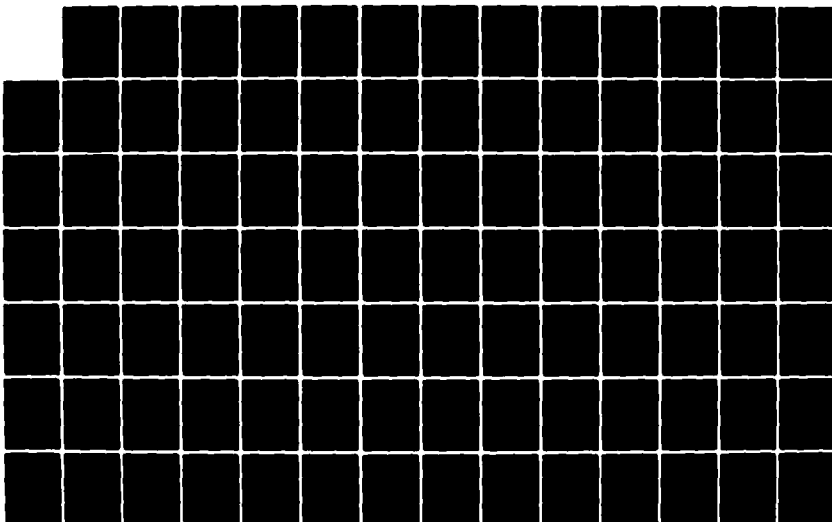
AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED
AIRFOIL SECTIONS VOLUM. (U) NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION MOFFETT FIELD CALIF.

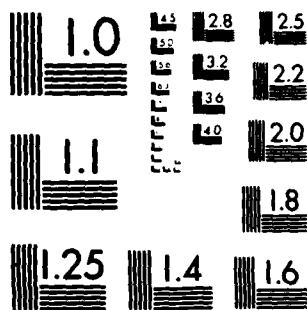
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WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 16114 $A_0 = 14.80^\circ$ $k = 0.098$
 $Re = 1.46 \text{ E}6$ $A1 = 9.90^\circ$ $M = 0.110$
 $C_{Lmax} = 2.48$ $C_{Mmin} = -0.44$ $C_{Dmax} = 1.02$
 $\alpha_{Lmax} = 22.8^\circ$ $\xi = 0.294$ $M_{max} = 0.539$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Pmax} = 20.3$ $\alpha_{Mmax} = 20.8^\circ$

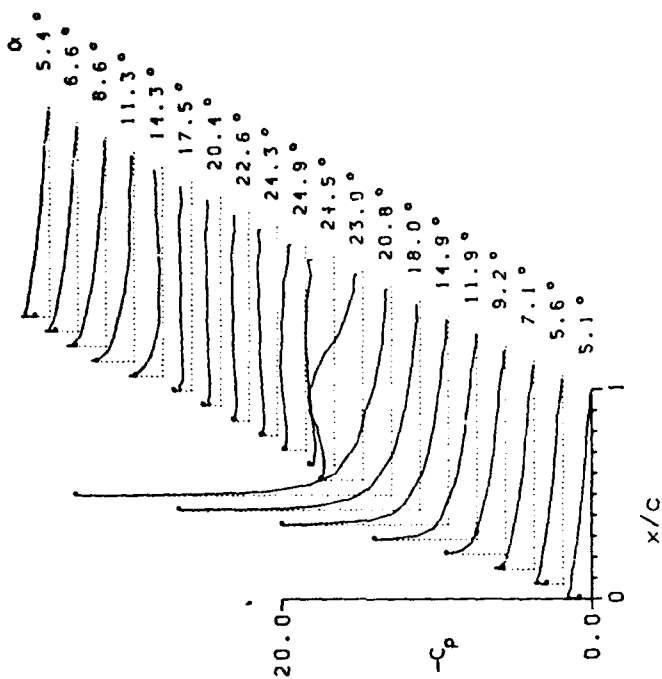
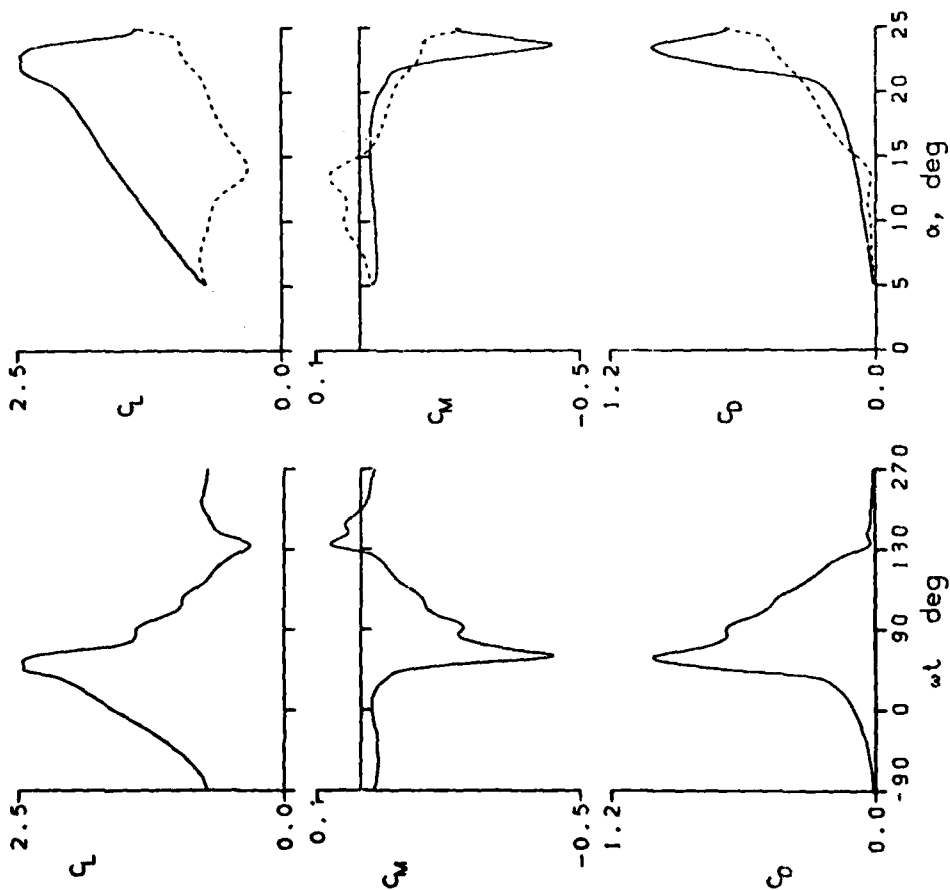


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 16200	A0 = 14.80°	k = 0.098
Re = 2.43 E6	A1 = 9.90°	M = 0.185
CLmax = 2.43	CMmin = -0.40	CDmax = 0.93
αLmax = 21.8°	ξ = 0.310	Mmax = 1.071
αCMmin = 14.3°	-CDmax = 21.0	αMmax = 20.3°

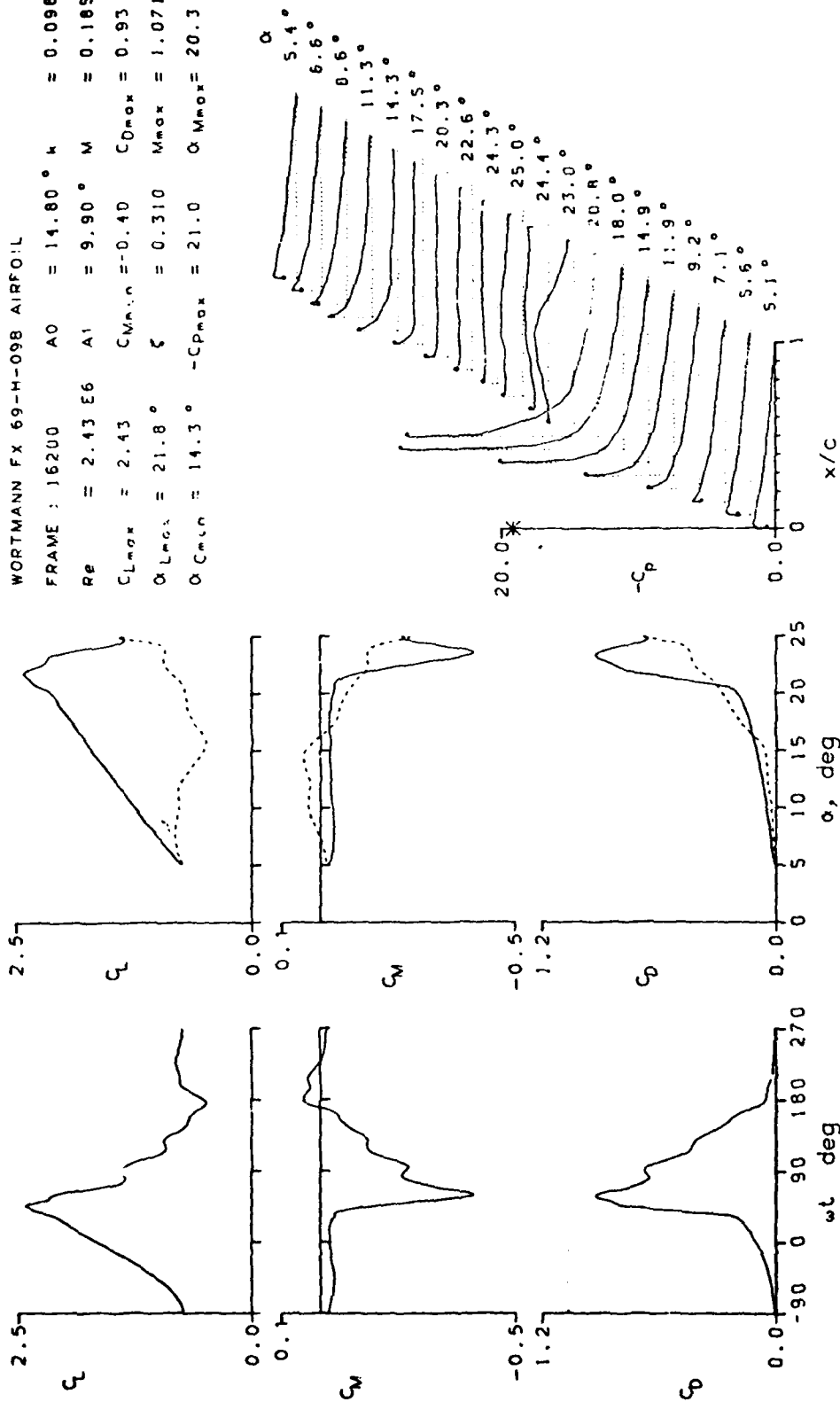


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL

FRAME : 16213 $A_0 = 6.34^\circ$ $h = 0.050$
 $R_0 = 2.50 \text{ E6}$ $A_1 = 10.01^\circ$ $M = 0.184$
 $C_{L_{max}} = 1.78$ $C_{M_{min}} = -0.04$ $C_{D_{max}} = 0.12$
 $\alpha_{L_{max}} = 16.3^\circ$ $\xi = 0.107$ $M_{max} = 0.824$
 $\alpha_{C_{min}} = 5.8^\circ$ $-C_{D_{max}} = 14.5$ $\alpha_{M_{max}} = 16.4^\circ$

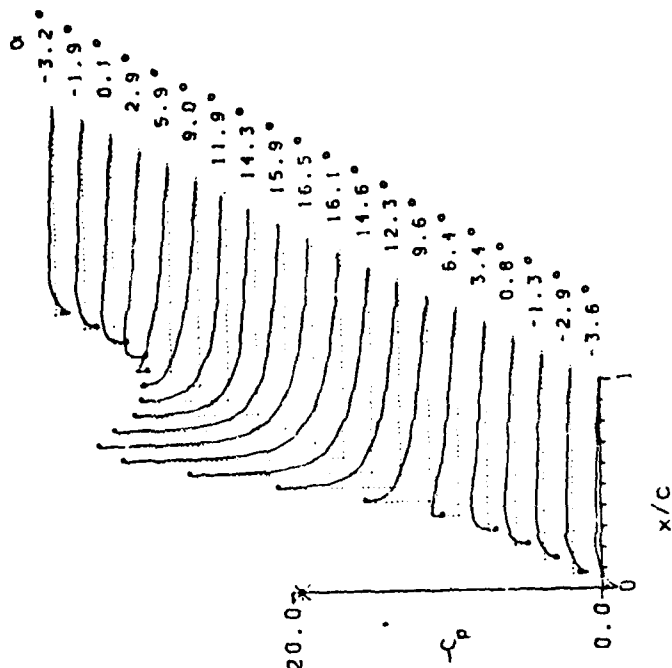
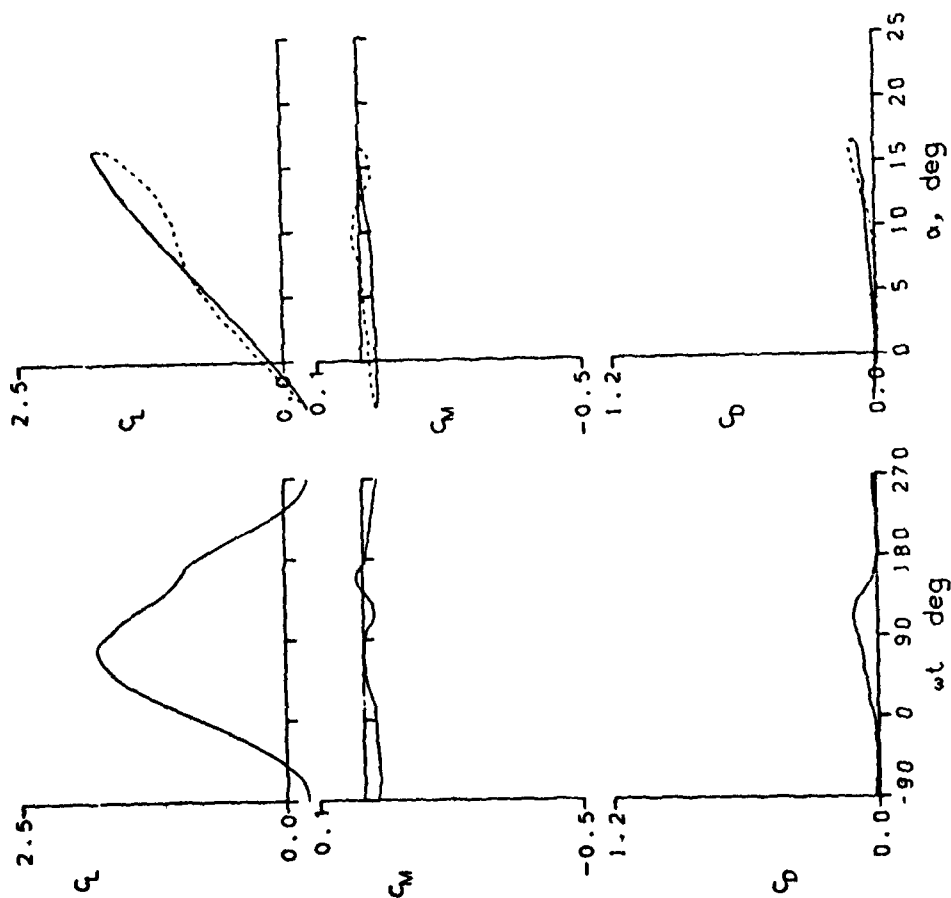


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL

FRAME : 16215	$A_0 = 6.33^\circ$	$k = 0.200$
$Re = 2.49 \text{ E}6$	$A_1 = 10.01^\circ$	$M = 0.184$
$C_{L_{max}} = 1.79$	$C_{M_{min}} = -0.07$	$C_{D_{max}} = 0.12$
$\alpha_{L_{max}} = 16.5^\circ$	$\xi = 0.600$	$M_{max} = 0.842$
$\alpha_{C_{M_{min}}} = 5.8^\circ$	$-C_{D_{max}} = 15.0$	$\alpha_{M_{max}} = 16.3^\circ$

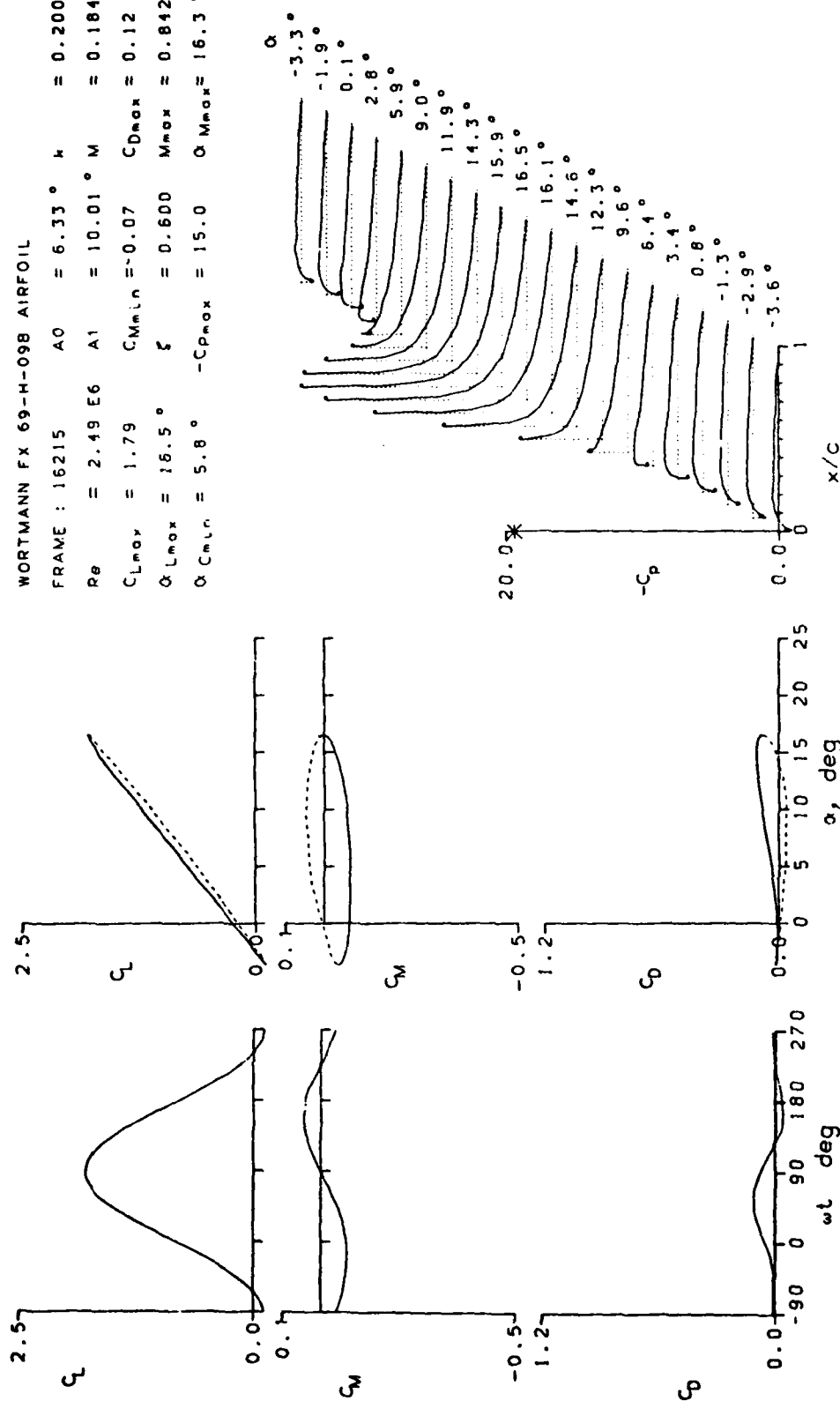


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 16300 $A0 = 14.81^\circ$ $k = 0.099$
 $Re = 2.89 \text{ E}6$ $A1 = 9.88^\circ$ $M = 0.220$
 $C_{Lmax} = 2.35$ $C_{Mmin} = -0.44$ $C_{Dmax} = 0.93$
 $\alpha_{Lmax} = 21.5^\circ$ $\xi = 0.421$ $M_{max} = 1.232$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 17.4$ $\alpha_{Mmax} = 18.6^\circ$

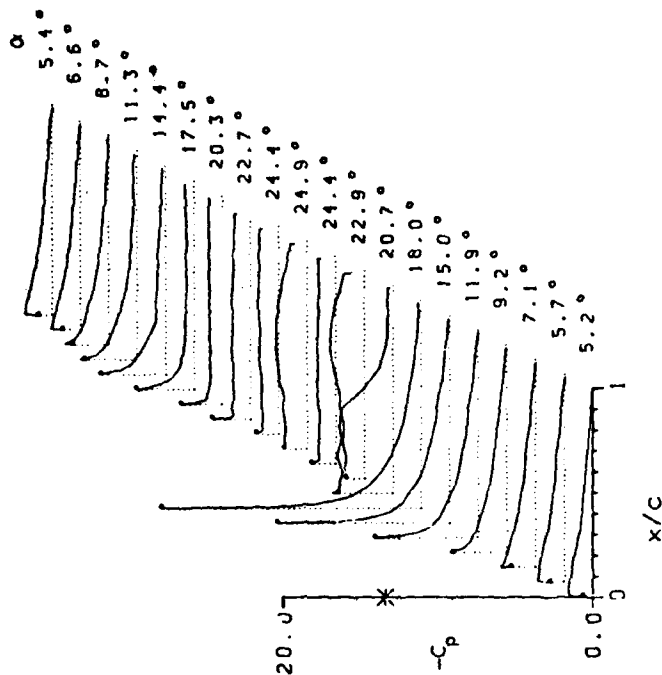
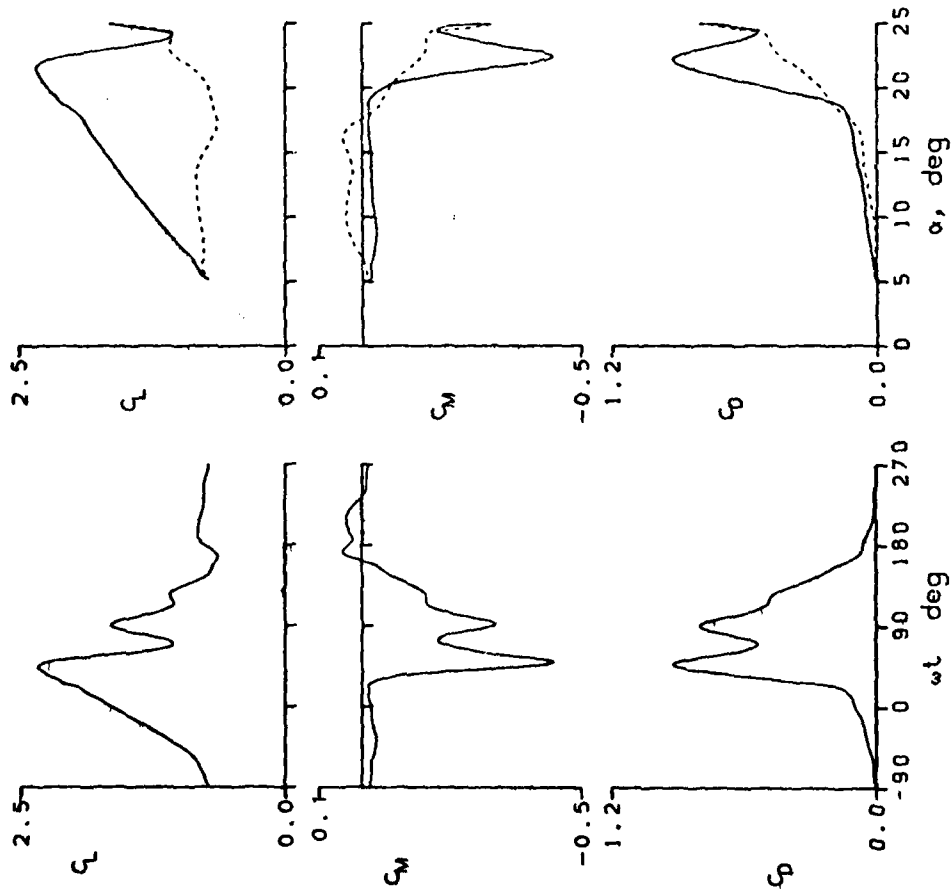


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 16308 $A_0 = 14.83^\circ$ $k = 0.099$

$Re = 3.23 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.249$

$C_{Lmax} = 2.32$ $C_{Dmin} = -0.44$ $C_{Dmax} = 0.88$

$\alpha_{Lmax} = 20.8^\circ$ $\xi = 0.543$ $M_{max} = 1.273$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 14.0$ $\alpha_{Mmax} = 16.8^\circ$

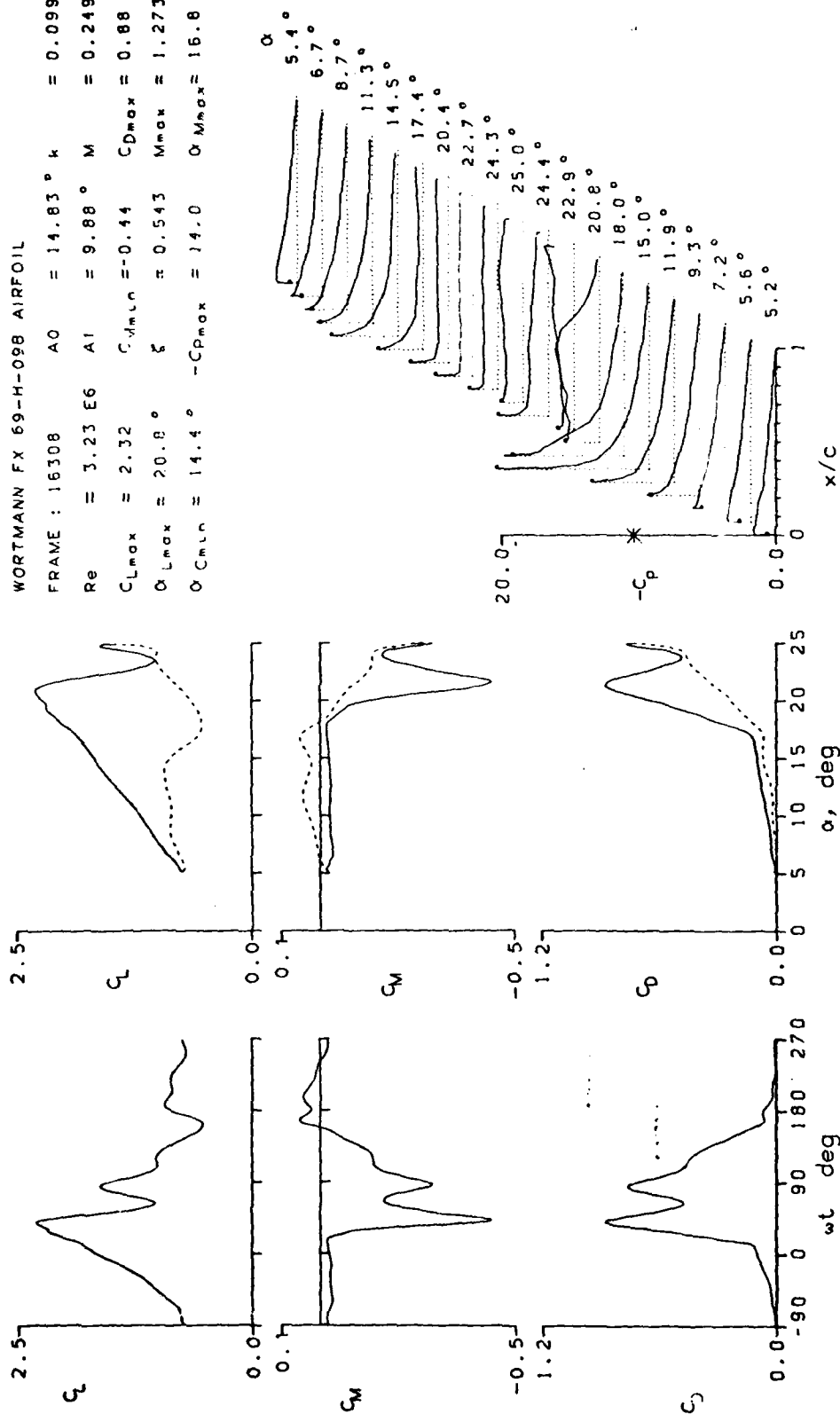


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL TRIP

FRAME : 17100 $A_0 \approx 14.81^\circ$ $\mu = 0.050$

$Re \approx 2.45 \text{ E}6$ $A_1 \approx 9.88^\circ$ $M \approx 0.184$

$C_{Lmax} = 1.88$ $C_{Mmin} = -0.32$ $C_{Dmax} \approx 0.61$

$\alpha_{Lmax} = 18.9^\circ$ $\zeta = 0.306$ $Mmax = 0.762$

$\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 12.8$ $\alpha_{Mmax} = 16.4^\circ$

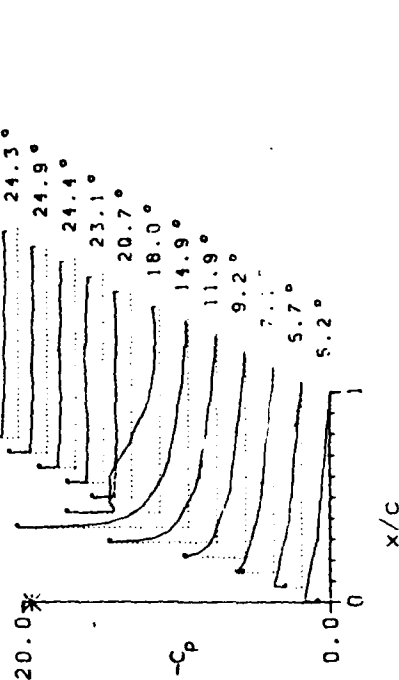
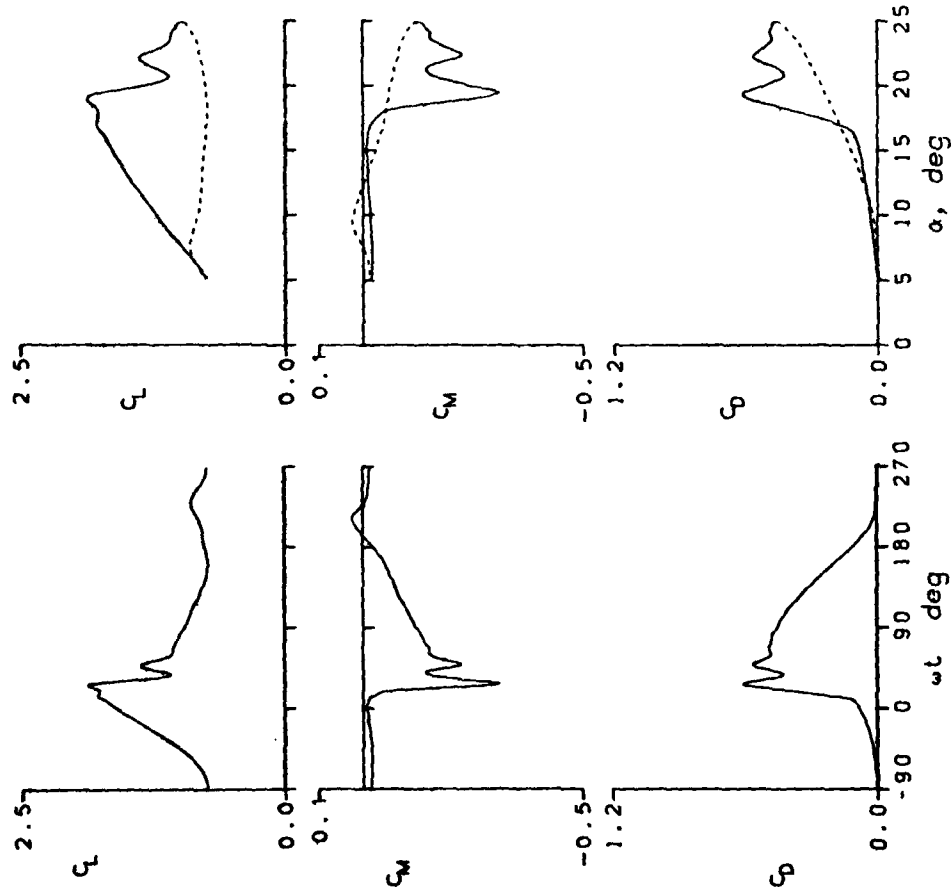


Figure 14.- Continued.

WORTMAN FX 69-H-098 AIRFOIL TRIP

FRAME : 17103 $A_0 = 14.81^\circ$ $k = 0.099$

$Re = 2.45 \times 10^6$ $A_1 = 9.90^\circ$ $M = 0.184$

$C_{Lmax} = 2.23$ $C_{Mmin} = -0.47$ $C_{Dmax} = 0.91$

$\alpha_{Lmax} = 21.5^\circ$ $\xi = 0.420$ $M_{max} = 0.794$

$\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 13.7$ $\alpha_{Mmax} = 17.1^\circ$

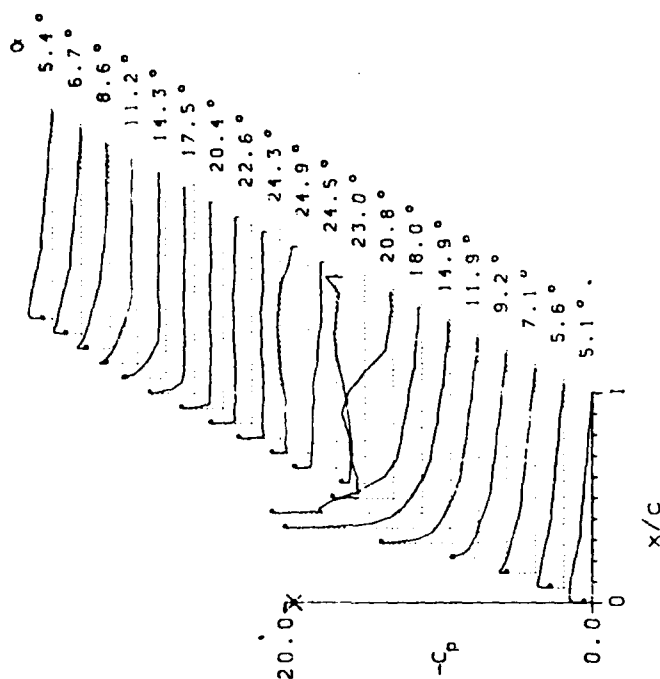
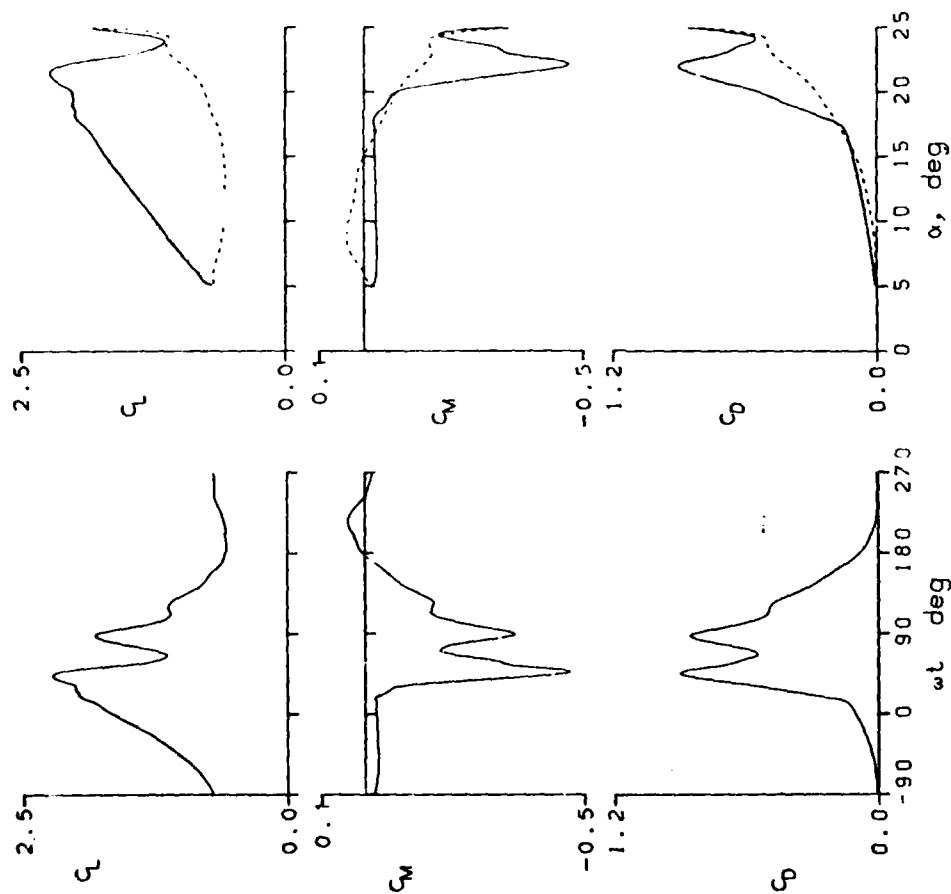


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 17109	$A_0 = 14.80^\circ$	$k = 0.149$	TRIP
$Re = 2.45 \text{ E} 6$	$A_1 = 9.89^\circ$	$M = 0.184$	
$C_{Lmax} = 2.37$	$C_{Mmin} = -0.53$	$C_{Dmax} = 1.07$	
$\alpha_{Lmax} = 23.6^\circ$	$\xi = 0.175$	$M_{max} = 0.802$	
$\alpha_{Cmin} = 14.3^\circ$	$-C_{pmax} = 13.9$	$\alpha_{Mmax} = 17.7^\circ$	

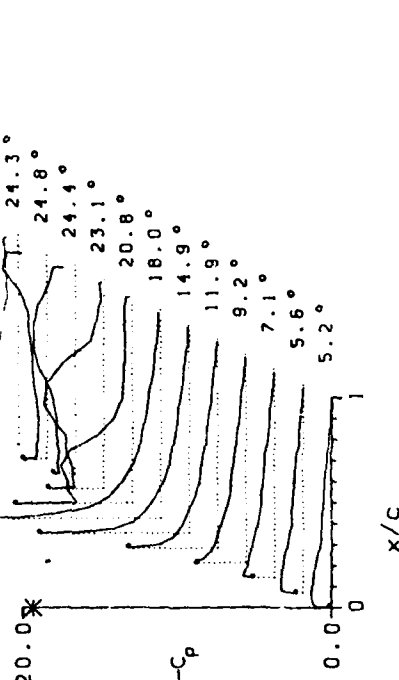
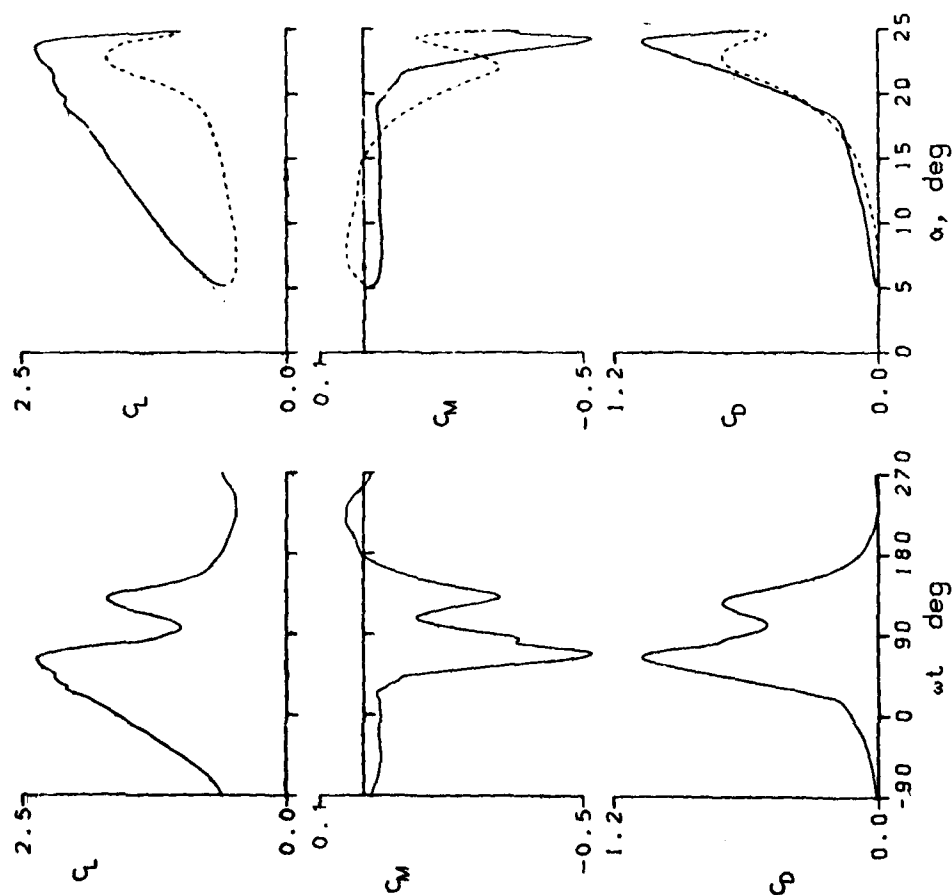


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL TRIP

FRAME : 17117 $A_0 = 14.84^\circ$ $\mu = 0.025$

$Re = 3.77 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.293$

$C_{Lmax} = 1.57$ $C_{Mmin} = -0.17$ $C_{Dmax} = 0.47$

$\alpha_{Lmax} = 14.4^\circ$ $\xi = 0.174$ $M_{max} = 1.212$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 9.5$ $\alpha_{Mmax} = 13.5^\circ$

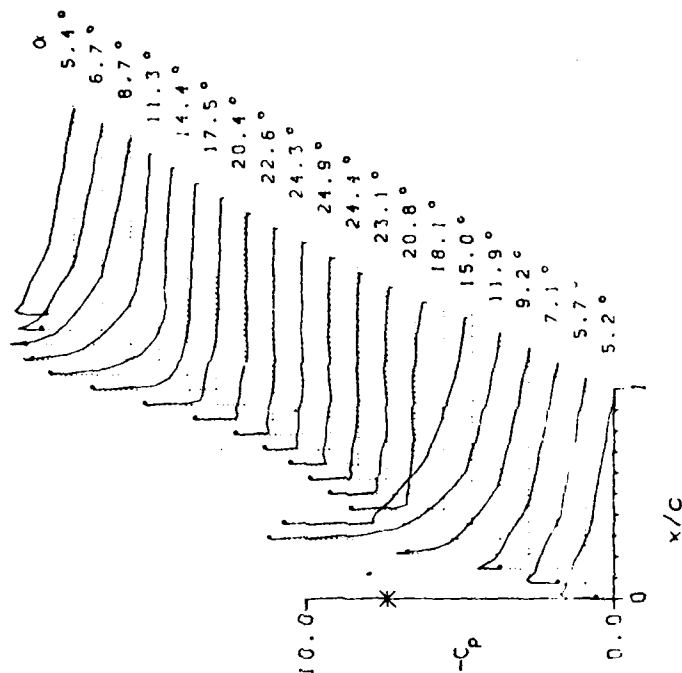
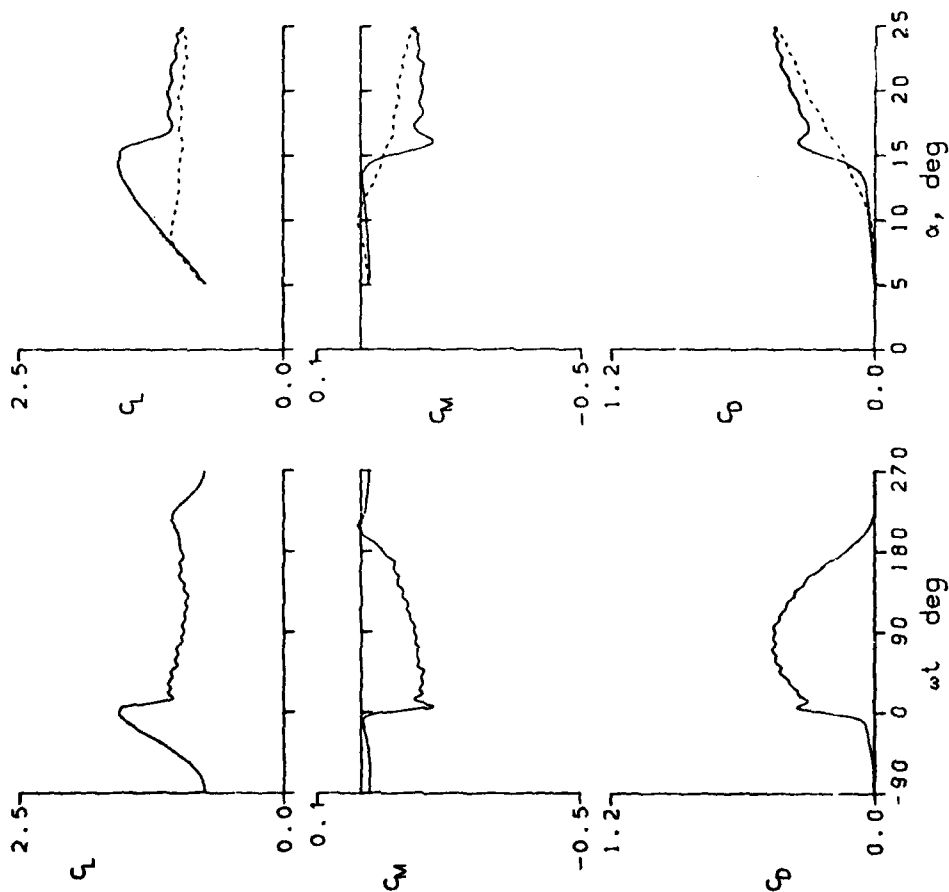


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL TRIP

FRAME : 17119 $A_0 = 14.81^\circ$ $k = 0.050$

$Re = 3.72 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.291$

$C_{Lmax} = 1.84$ $C_{Mmin} = -0.29$ $C_{Dmax} = 0.54$

$\alpha_{Lmax} = 17.1^\circ$ $\zeta = 0.333$ $M_{max} = 1.278$

$\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 10.2$ $\alpha_{Mmax} = 14.3^\circ$

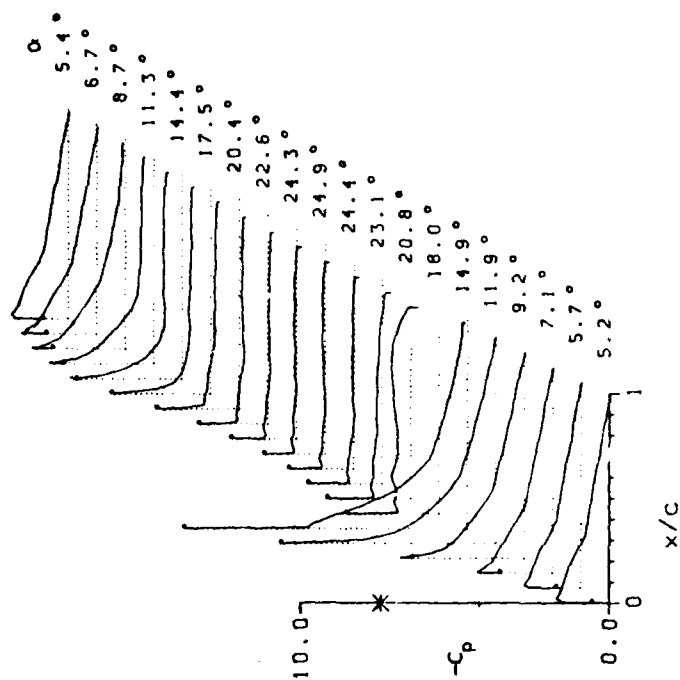
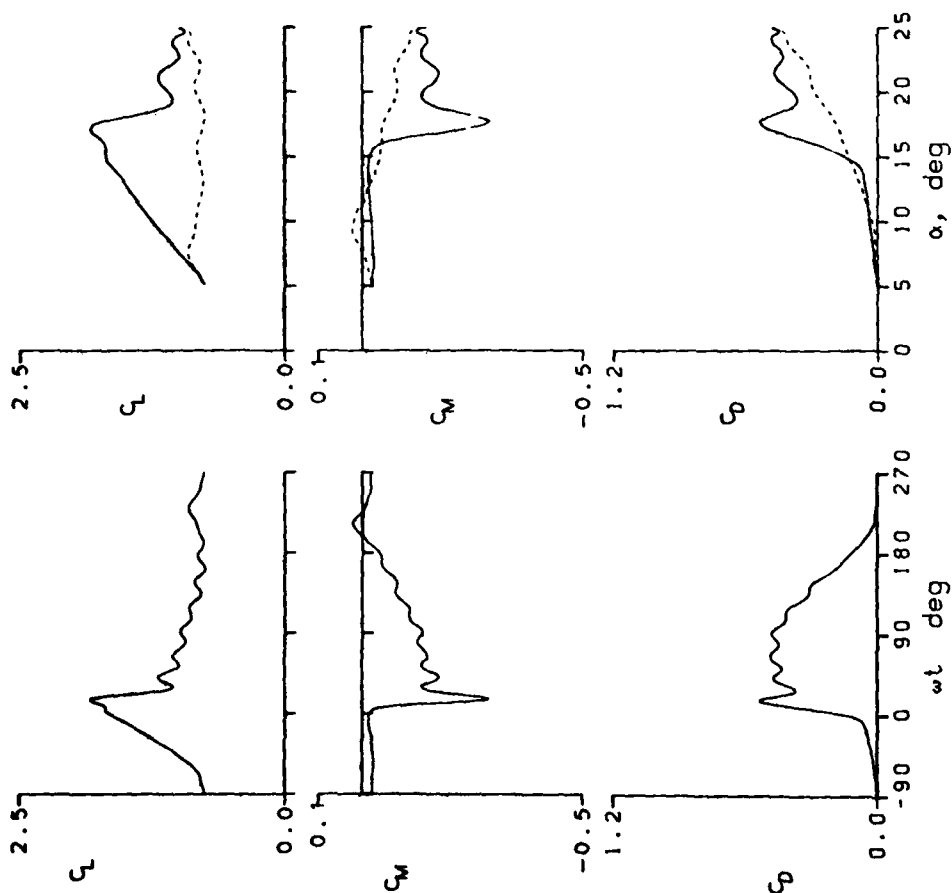


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL TRIP

FRAME : 17200 $A_0 = 14.81^\circ$ $\mu = 0.100$

$Re = 3.70 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.290$

$C_{Lmax} = 2.16$ $C_{Mmin} = -0.45$ $C_{Dmax} = 0.82$

$\alpha_{Lmax} = 20.0^\circ$ $\xi = 0.676$ $M_{max} = 1.316$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 10.7$ $\alpha_{Mmax} = 14.6^\circ$

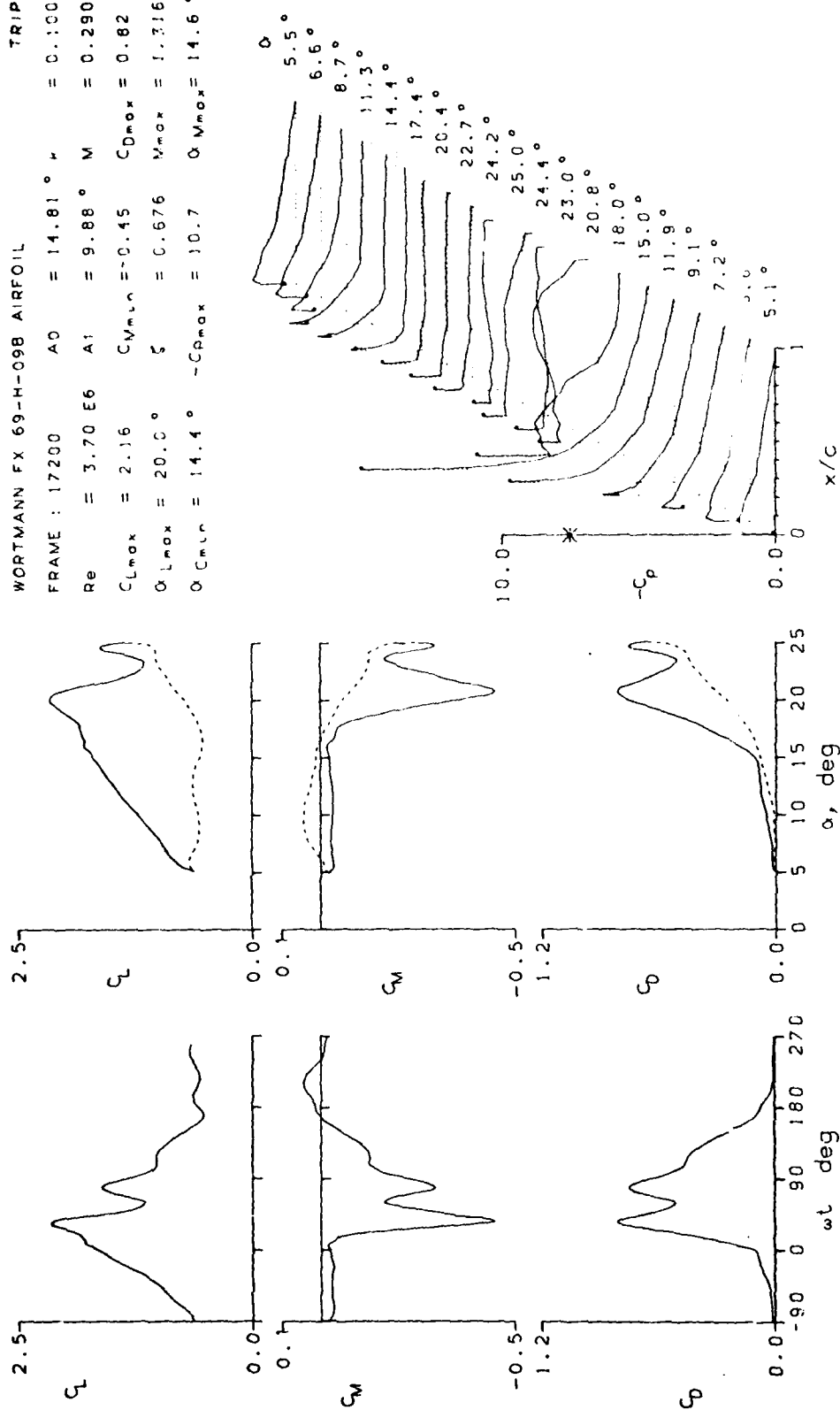


Figure 14.- Continued.

WORTMANN FX 69-M-098 AIRFOIL

FRAME : 21100 $A_0 = 14.95^\circ$ $\mu = 0.010$
 $Re = 3.72 \text{ E}6$ $A_1 = 9.87^\circ$ $M = 0.291$
 $C_{Lmax} = 1.52$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.43$
 $\alpha_{Lmax} = 13.7^\circ$ $\xi = 0.012$ $M_{max} = 1.245$
 $\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 14.1^\circ$

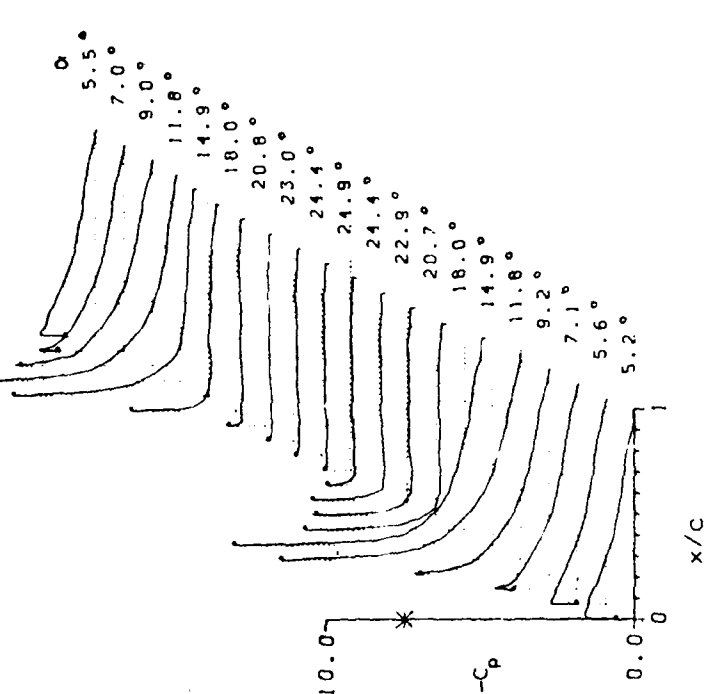
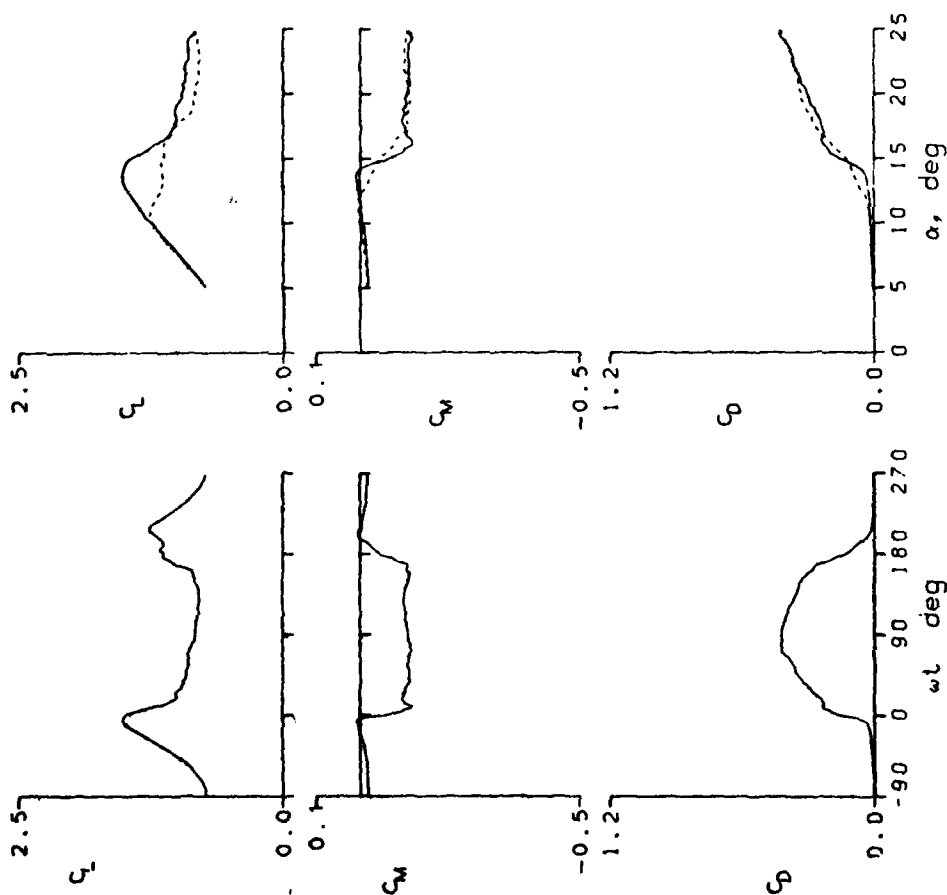


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL
 FRAME : 21107 $\alpha_0 = 9.78^\circ$ $k = 0.010$
 $Re = 3.79 \text{ E}6$ $A1 = 9.94^\circ$ $M = 0.299$
 $C_{Lmax} = 1.50$ $C_{Nmin} = 0.11$ $C_{Dmax} = 0.28$
 $\alpha_{Lmax} = 13.3^\circ$ $\xi = 0.026$ $M_{max} = 1.262$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 9.5$ $\alpha_{Mmax} = 13.6^\circ$

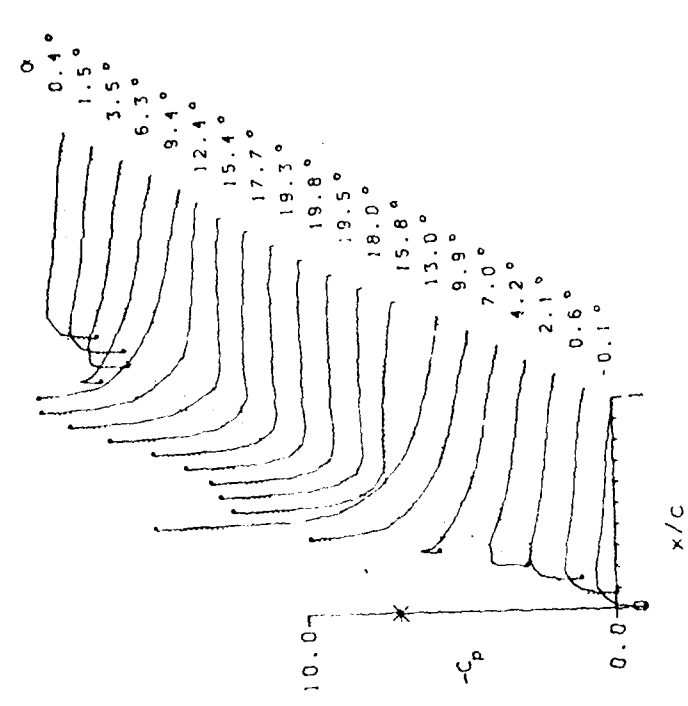
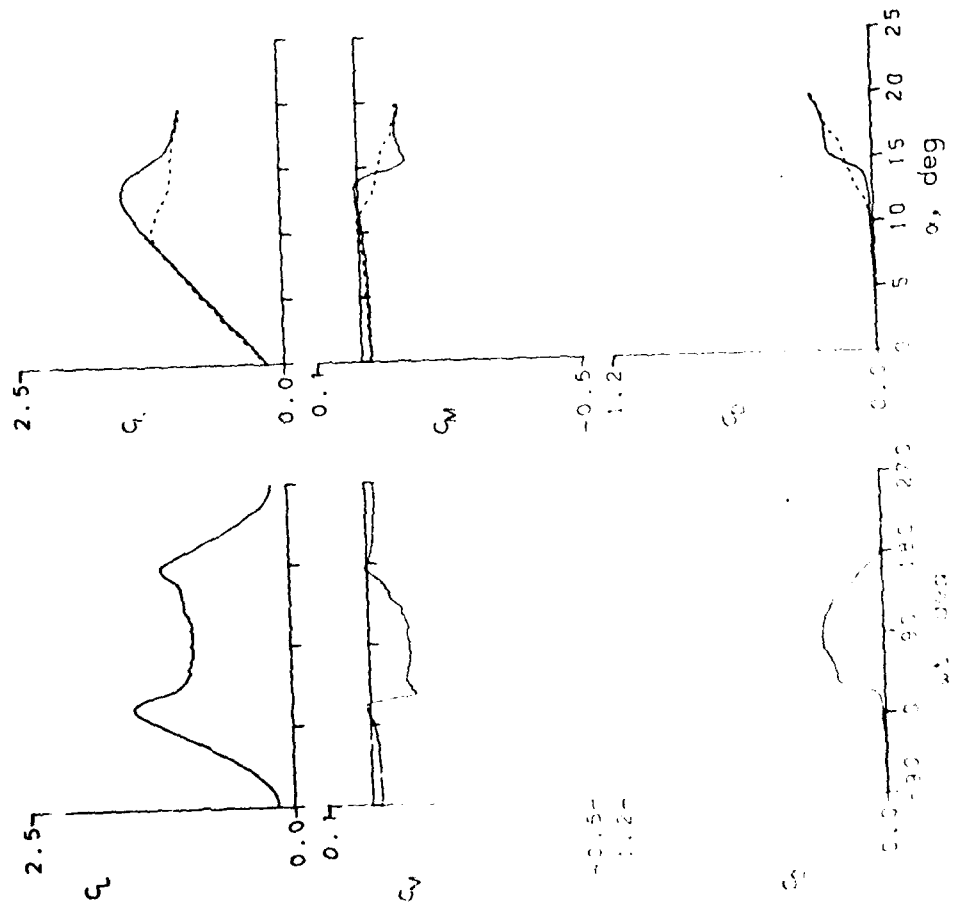


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 21112 $AD = 14.97^\circ$ $k = 0.010$
 $Re = 3.94 \times 10^6$ $A1 = 4.89^\circ$ $M = 0.301$
 $C_{Lmax} = 1.48$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.25$
 $\alpha_{Lmax} = 13.7^\circ$ $\xi = -0.104$ $M_{max} = 1.250$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.1^\circ$

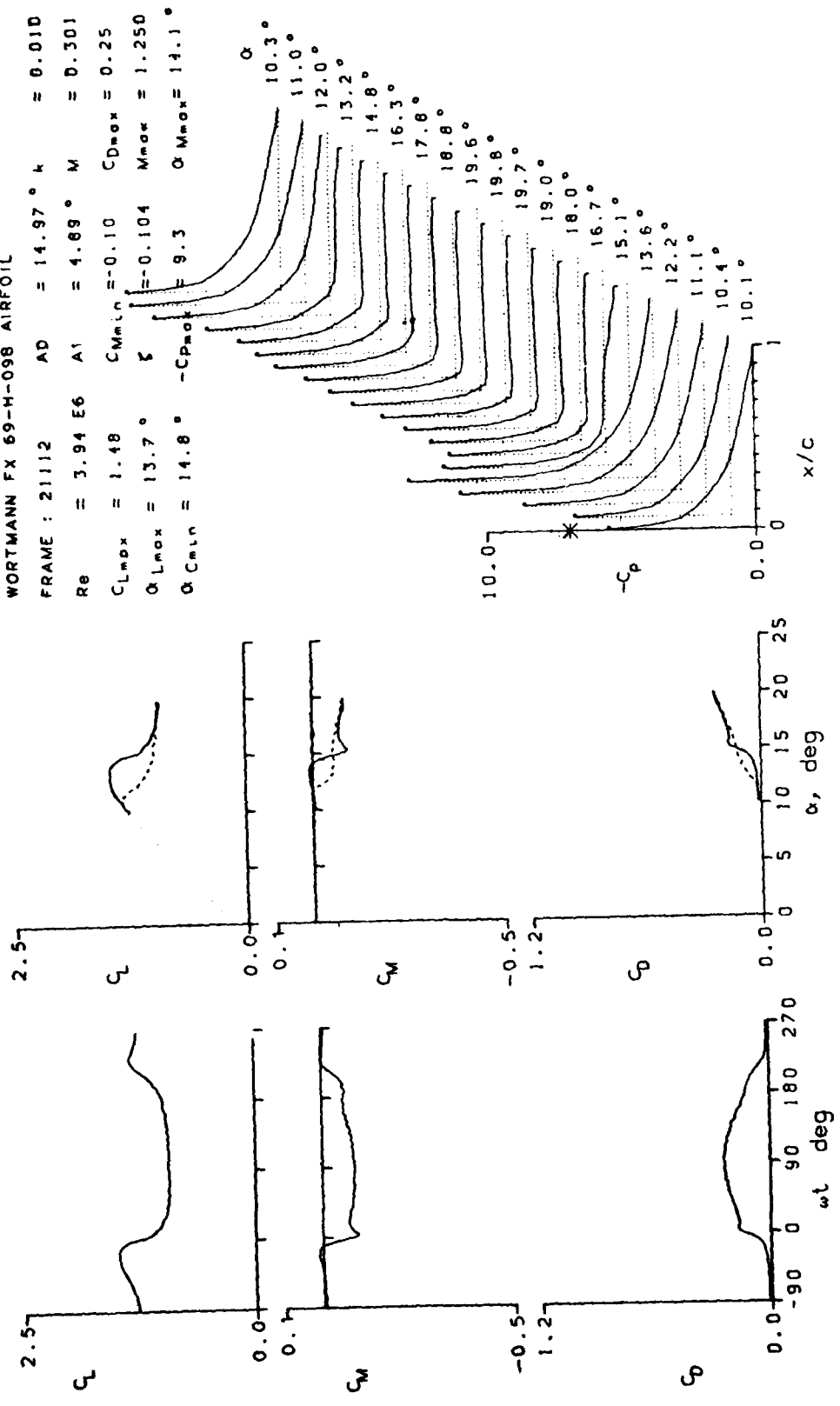


Figure 14.- Continued.

WORTMANN FX 69-M-008 AIRFOIL

FRAME : 21200	$A_0 = 9.94^\circ$	$k = 0.010$
$Re = 3.93 \text{ E} 6$	$A_1 = 4.89^\circ$	$M = 0.301$
$C_{Lmax} = 1.49$	$C_{Mmin} = -0.07$	$C_{Dmax} = 0.14$
$\alpha_{max} = 14.0^\circ$	$\zeta = -0.136$	$M_{max} = 1.256$
$\alpha_{crit} = 9.8^\circ$	$-C_{Dmax} = 9.4$	$\alpha_{Mmax} = 14.0^\circ$

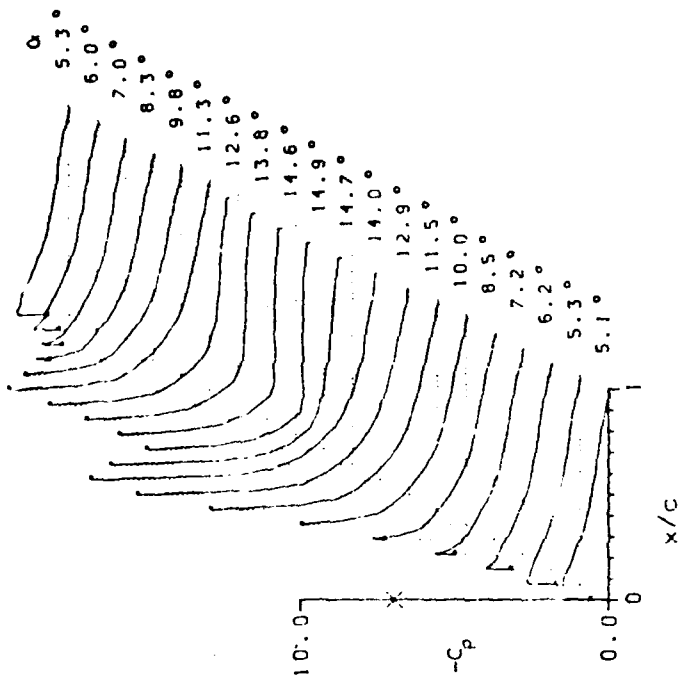
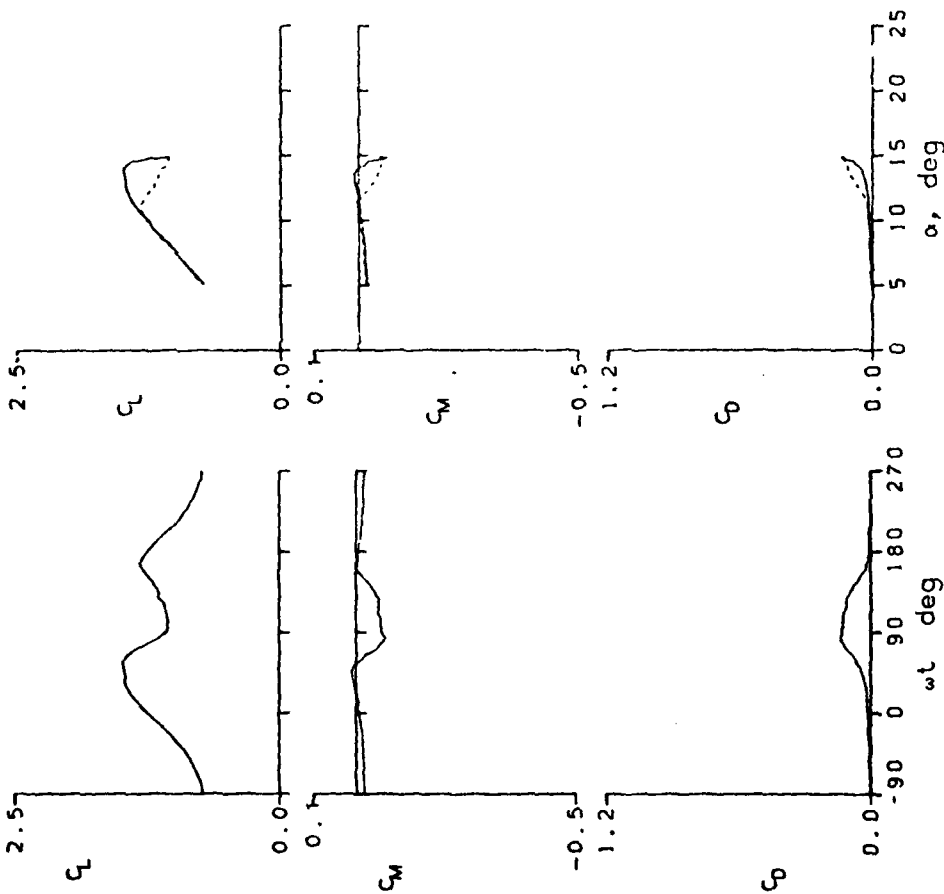


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL

FRAME : 21208	$A_0 = 3.15^\circ$	$h = 0.010$
$Re = 3.90 \text{ E} 6$	$A_1 = 10.16^\circ$	$M = 0.302$
$C_{Lmax} = 1.50$	$C_{Mmin} = -0.04$	$C_{Dmax} = 0.06$
$\alpha_{Lmax} = 12.8^\circ$	$\xi = 0.022$	$M_{max} = 1.224$
$\alpha_{Cmin} = 2.8^\circ$	$-C_{pmax} = 9.0$	$\alpha_{Mmax} = 13.4^\circ$

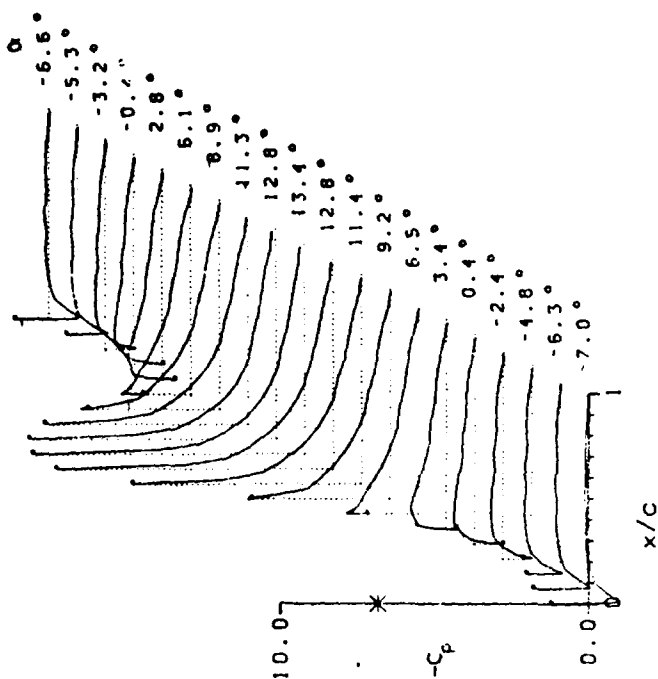
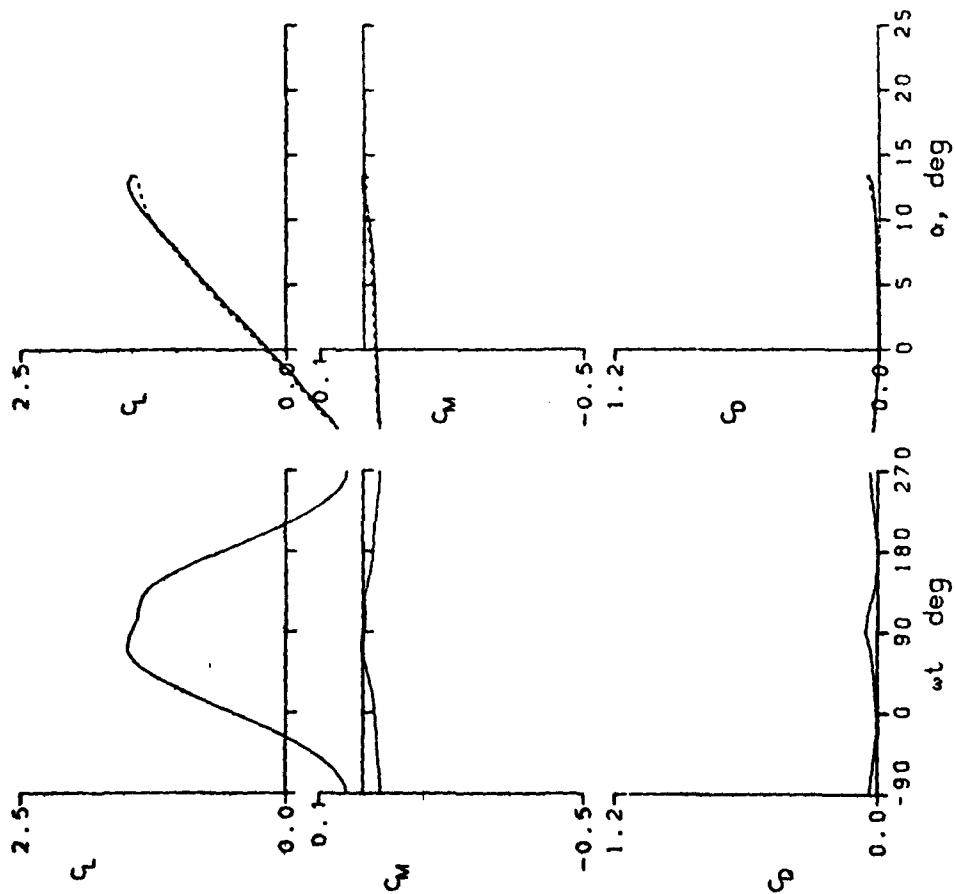


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 21219	A0 = 6.38°	k = 0.010
Rn = 2.46 E6	A1 = 10.00°	M = 0.184
C _{Lmax} = 1.54	C _{Mmin} = -0.09	C _{Dmax} = 0.19
α _{Lmax} = 14.8°	ξ = -0.018	M _{max} = 0.398
α _{Cmin} = 5.9°	-C _{Dmax} = 11.0	α _{Mmax} = 15.1°

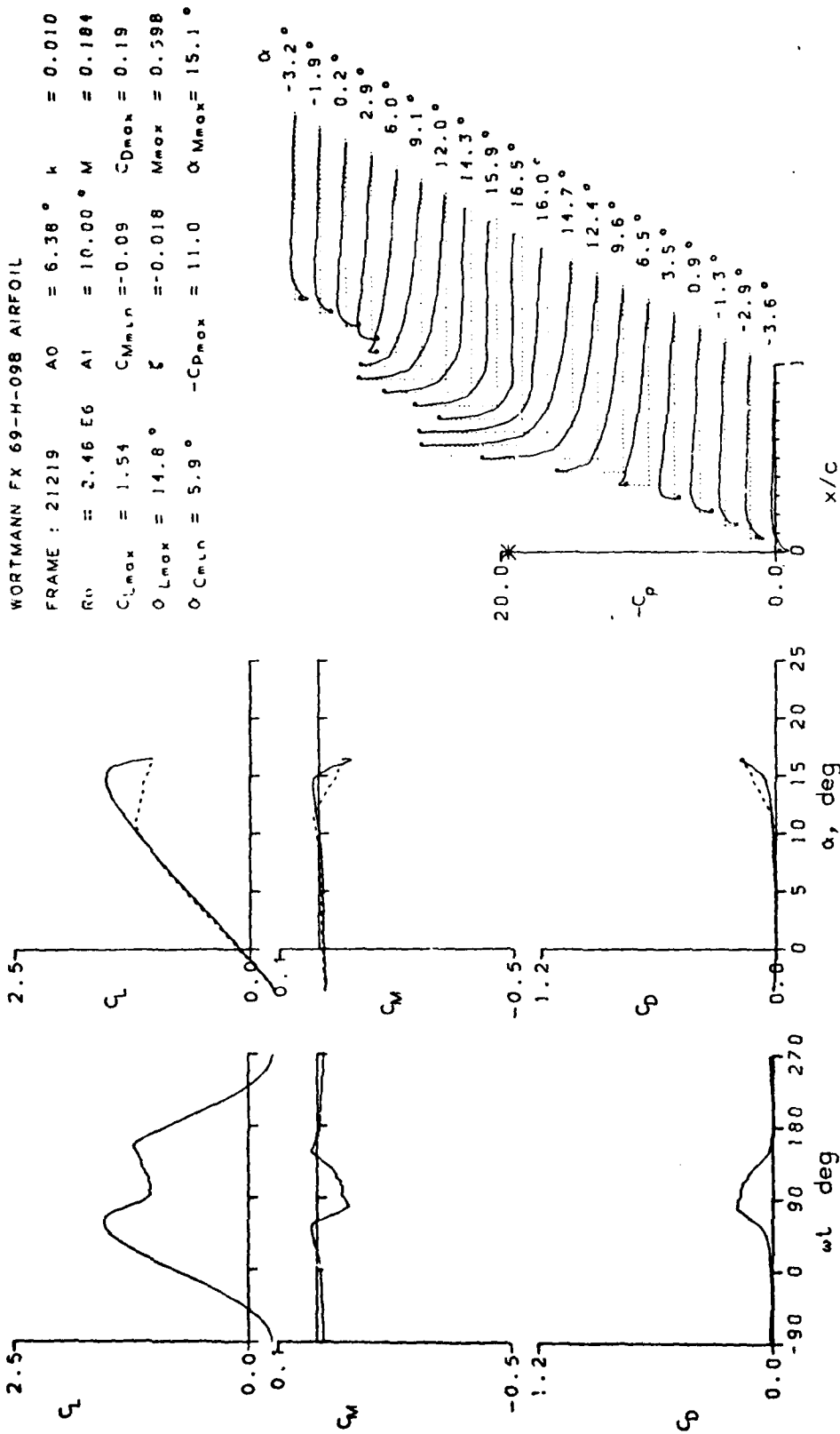


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22023 $A_0 = 14.84^\circ$ $k = 0.025$
 $R_0 = 3.73$ E_6 $A_1 = 9.90^\circ$ $M = 0.293$
 $C_{L_{max}} = 1.58$ $C_{M_{min}} = -0.17$ $C_{D_{max}} = 0.47$
 $\alpha_{L_{max}} = 14.4^\circ$ $\zeta = 0.202$ $M_{max} = 1.224$
 $\alpha_{C_{min}} = 14.4^\circ$ $-C_{p_{max}} = 9.6$ $\alpha_{M_{max}} = 13.0^\circ$

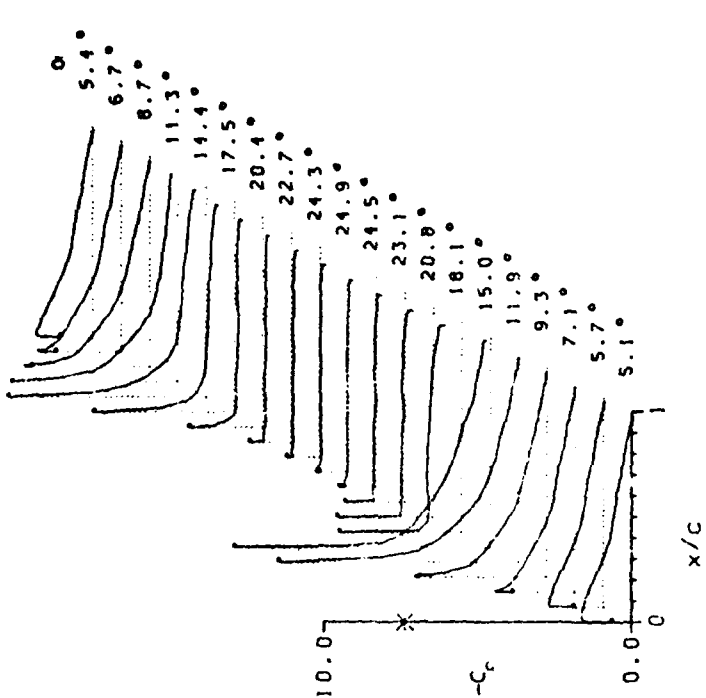
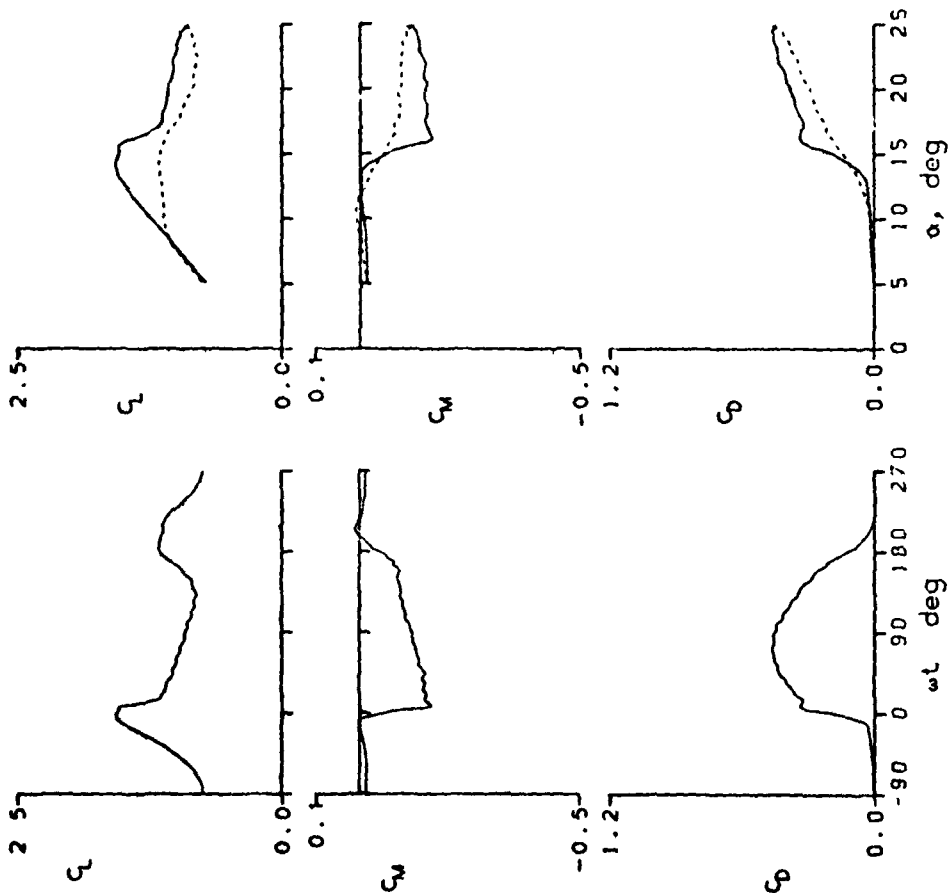


Figure 14.- Continued.

WORTMANN FX G9-M-G98 AIRFOIL
 FRAME : 22103 $A_0 = 14.82^\circ$ $k = 0.019$
 $Re = 3.75 \times 10^6$ $A_1 = 9.90^\circ$ $M = 0.294$
 $C_{Lmax} = 1.82$ $C_{Mmin} = -0.28$ $C_{Dmax} = 0.53$
 $\alpha_{Lmax} = 17.1^\circ$ $\zeta = 0.368$ $M_{max} = 1.348$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 10.6$ $\alpha_{Mmax} = 14.6^\circ$

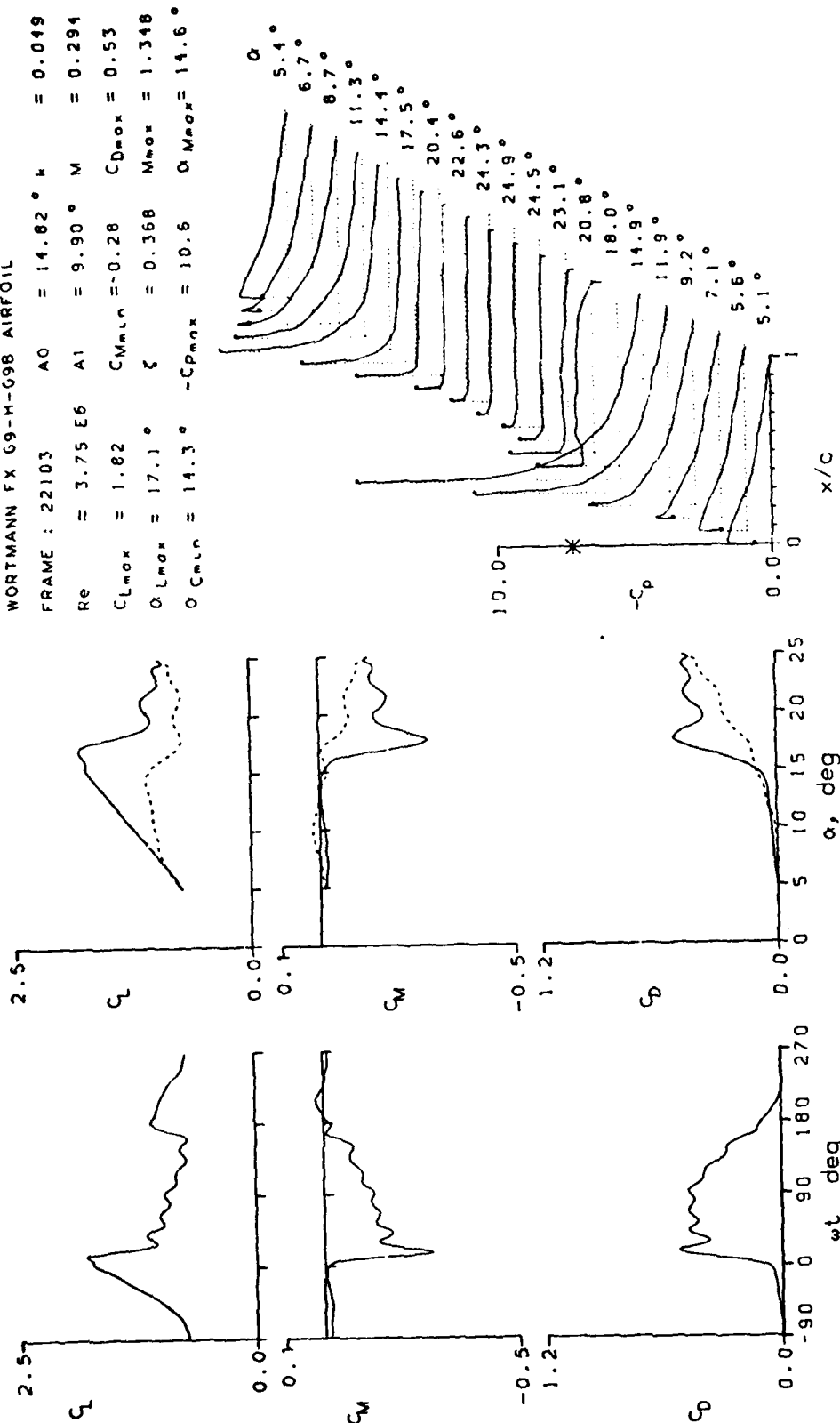


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22201	A0 = 14.79°	k = 0.101
Re = 3.55 E6	A1 = 9.91°	M = 0.285
CLmax = 2.15	CMmin = -0.42	CDmax = 0.81
αLmax = 20.3°	ξ = 0.650	Mmax = 1.354
αCMmin = 14.3°	-CPmax = 11.4	αMmax = 15.5°

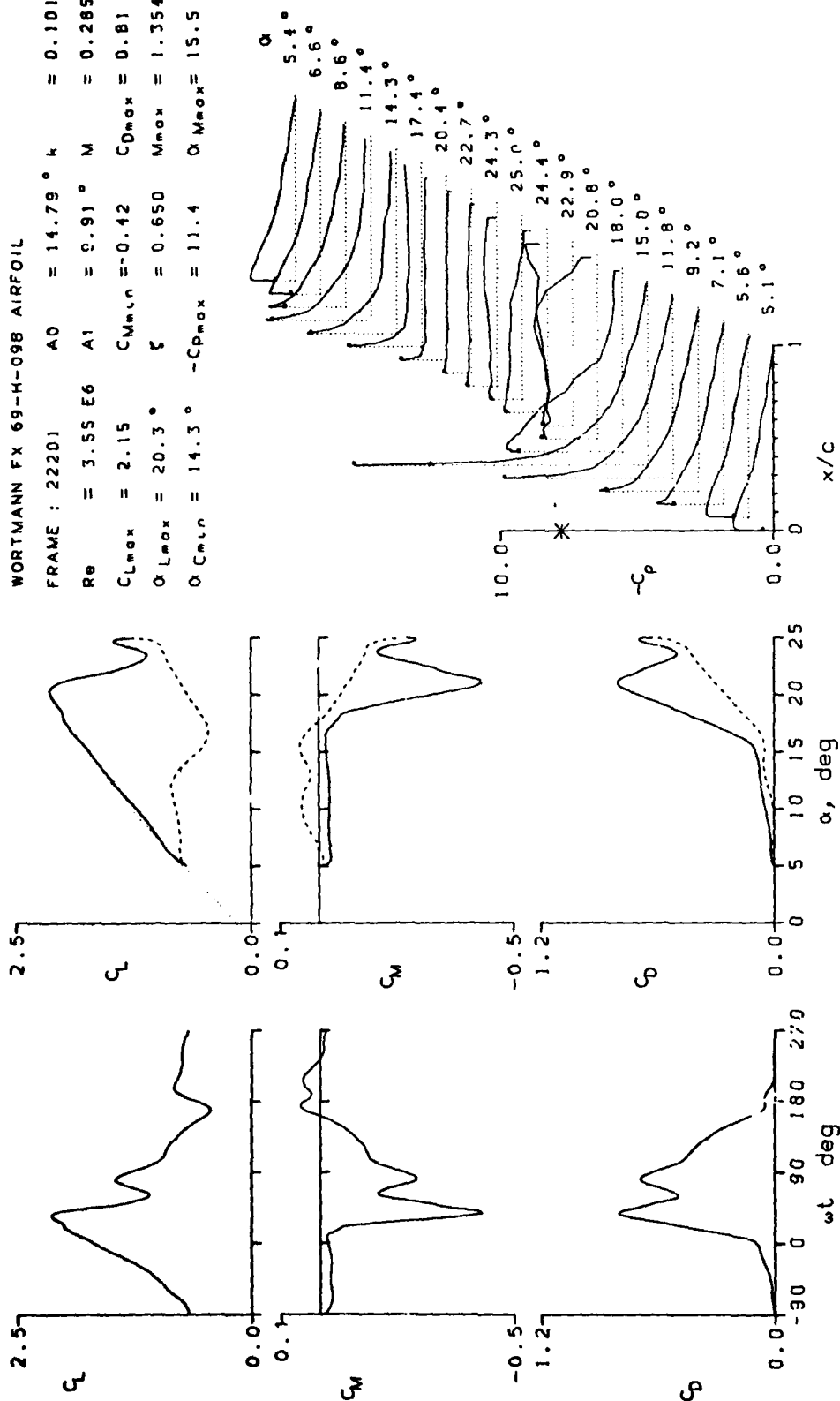


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 22206 $A_0 = 14.87^\circ$ $k = 0.154$
 $Re = 3.48 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.279$
 $C_{Lmax} = 2.23$ $C_{Mmin} = -0.49$ $C_{Dmax} = 1.00$
 $\alpha_{Lmax} = 22.6^\circ$ $\xi = 0.431$ $M_{max} = 1.348$
 $\alpha_{Cmin} = 14.5^\circ$ $-C_{Pmax} = 11.8$ $\alpha_{Mmax} = 16.5^\circ$

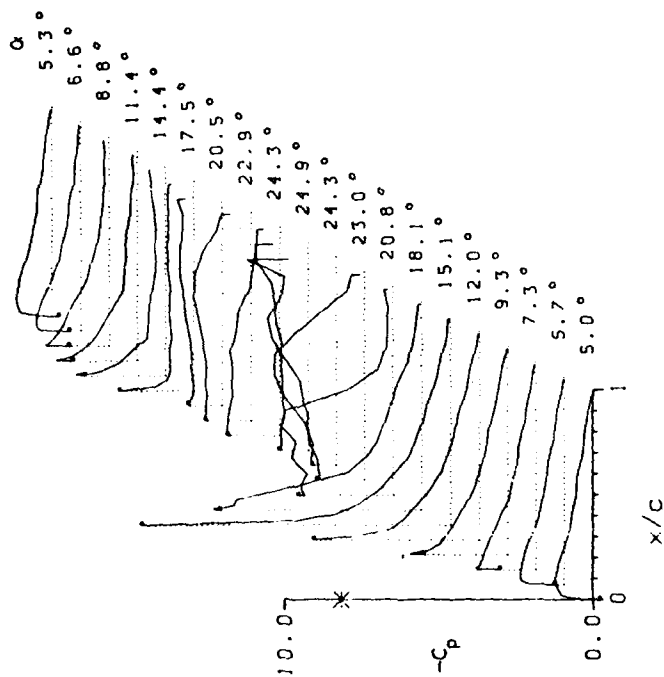
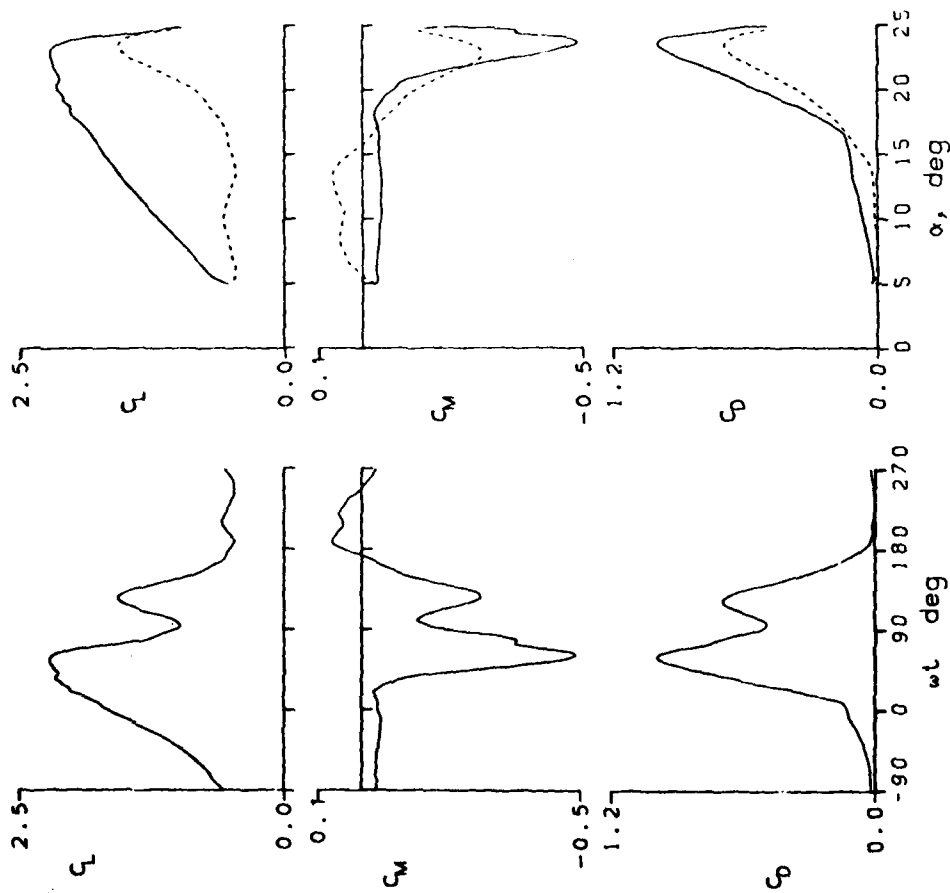


Figure 14.- Continued.

WORTMANN FX 59-H-098 AIRFOIL

FRAME : 22208 $A_0 = 14.81^\circ$ $k = 0.097$
 $Re = 3.48 E6$ $A_1 = 9.88^\circ$ $M = 0.281$
 $C_{Lmax} = 2.24$ $C_{Mmin} = -0.45$ $C_{Dmax} = 0.85$
 $\alpha_{Lmax} = 20.6^\circ$ $\alpha_{C} = 0.607$ $M_{max} = 1.351$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 11.7$ $\alpha_{Mmax} = 15.5^\circ$

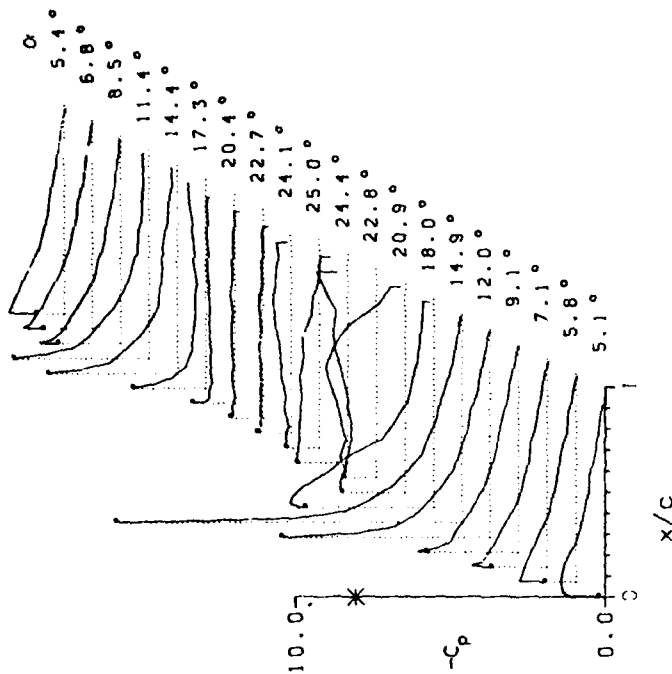
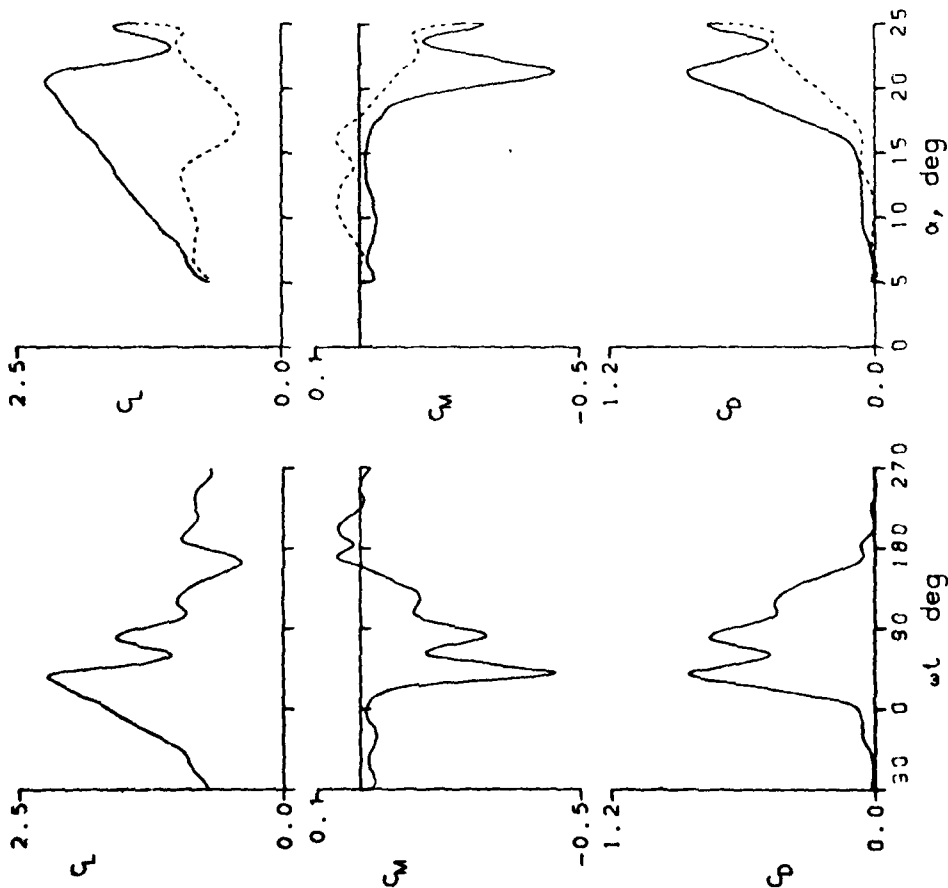


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22216 $A_0 = 9.81^\circ$ $k = 0.024$
 $Re = 3.73 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.60$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.32$
 $\alpha_{Lmax} = 15.0^\circ$ $\xi = 0.086$ $M_{max} = 1.365$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Pmax} = 10.2$ $\alpha_{Mmax} = 14.2^\circ$

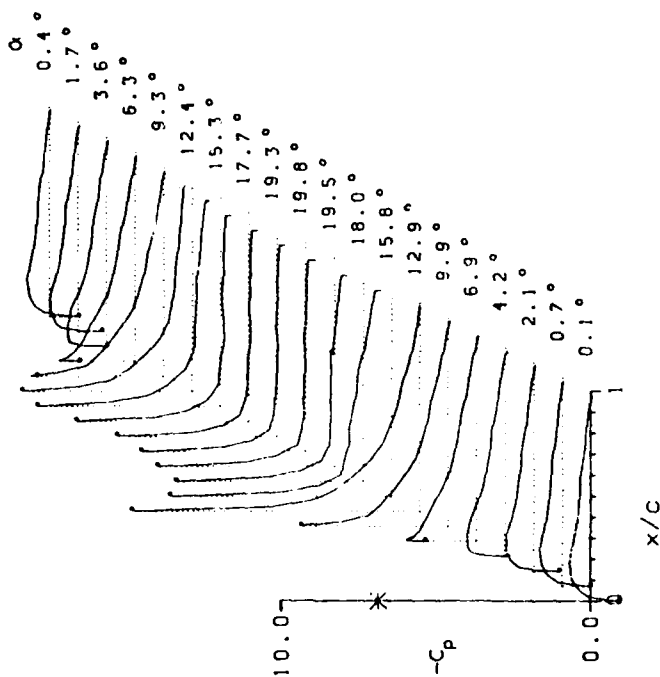
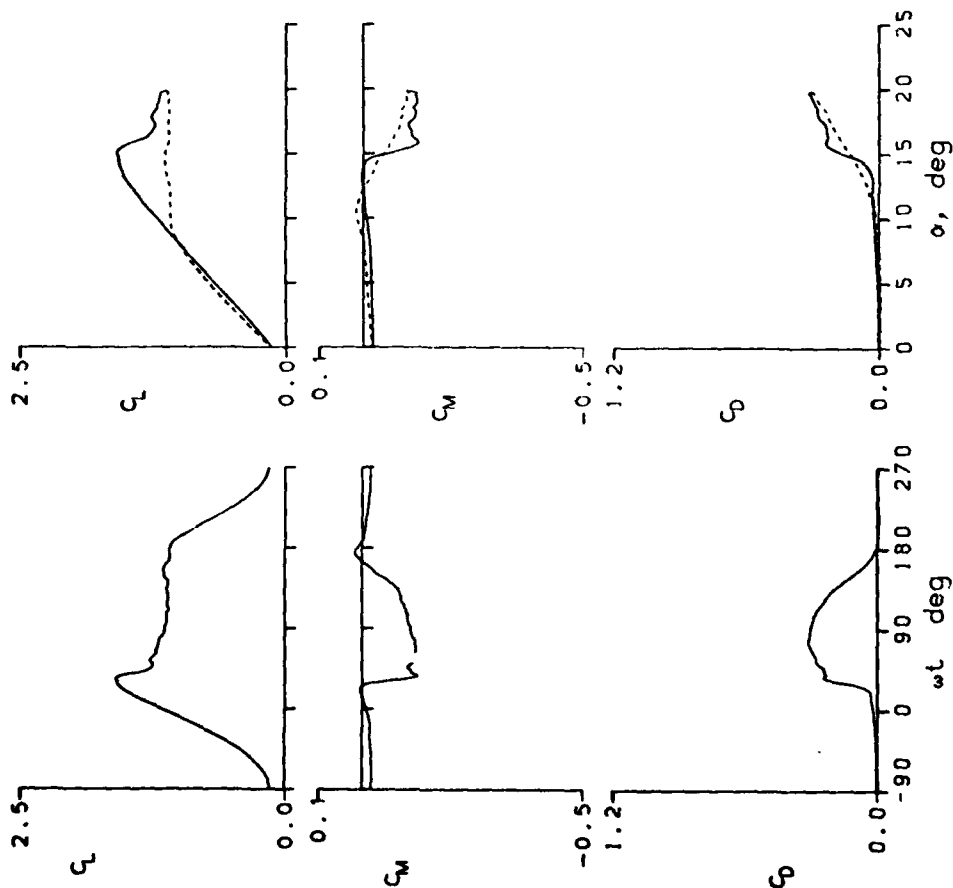


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22217	A0 = 9.79°	k = 0.049
Re = 3.72 E6	A1 = 9.91°	M = 0.302
C _{Lmax} = 1.79	C _{Mmin} = -0.22	C _{Dmax} = 0.46
α _{Lmax} = 16.3°	ξ = 0.159	M _{max} = 1.362
α _{Cmin} = 9.3°	-C _{Pmax} = 10.2	α _{Mmax} = 14.2°

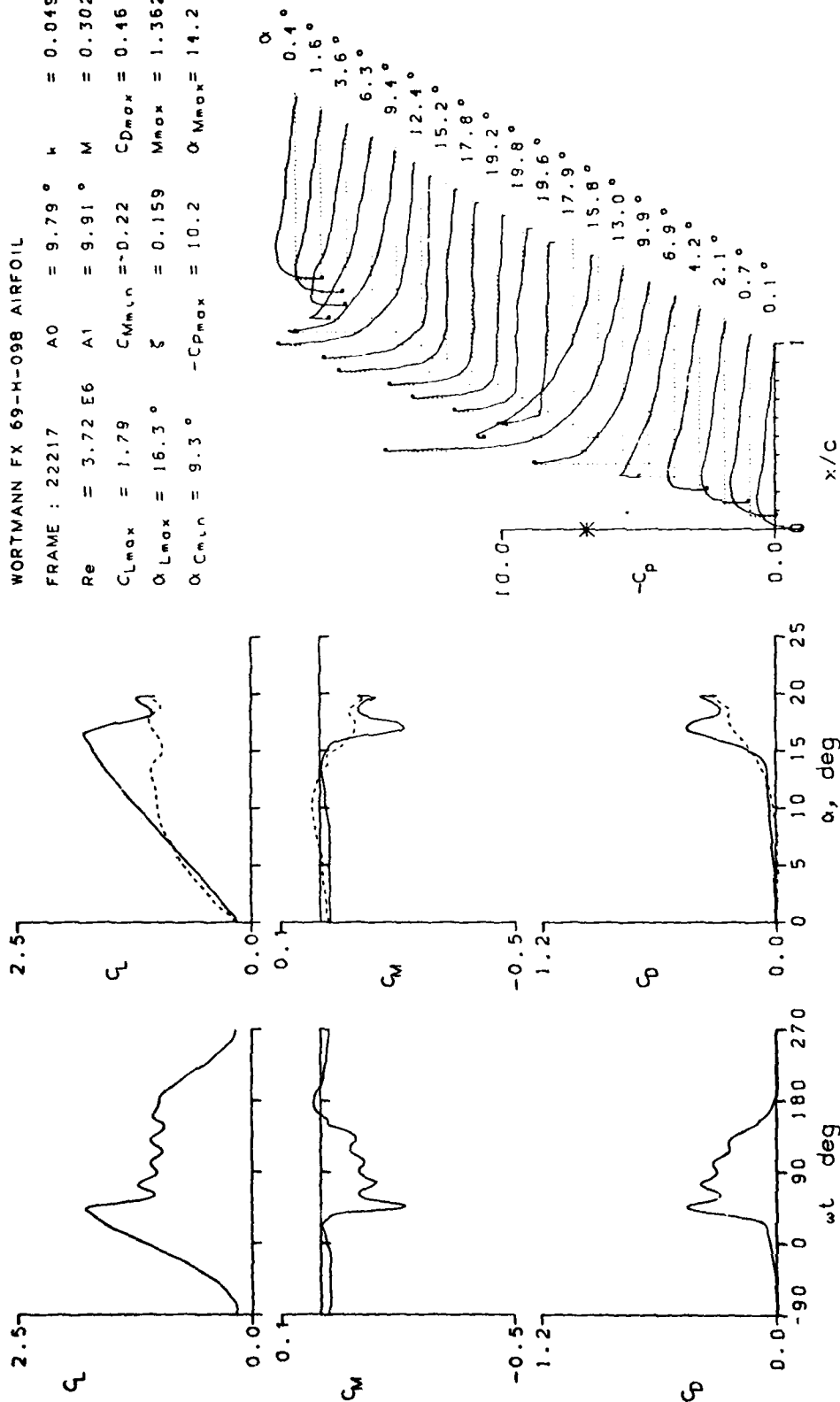


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 22218 AC = 9.81° = 0.098
 Re = 3.69E6 A* = 9.89° M = 0.300
 CLmax = 2.01 CMmax = 0.34 CDmax = 0.63
 α CLmax = 18.2° δ = 0.371 Vmax = 1.362
 α CMmax = 9.2° -CDmax = 0.3 O Mmax = 14.7°

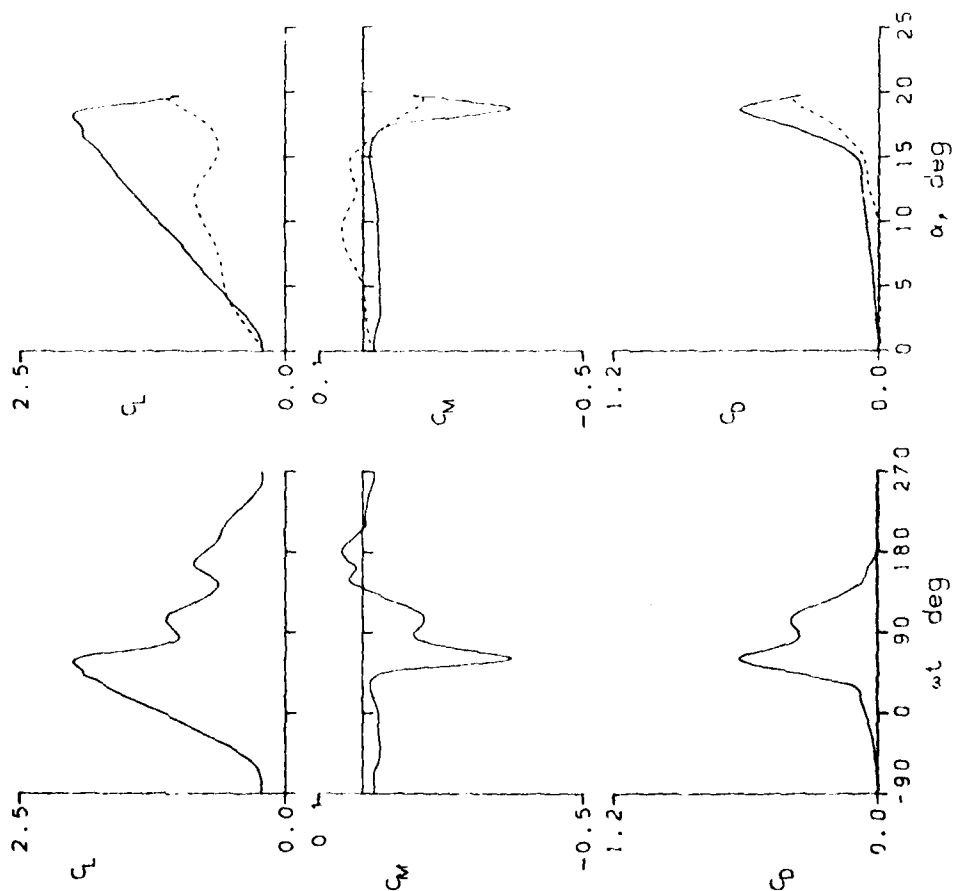


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22219	A0 = 9.93°	k = 0.149
Re = 3.62 E6	A1 = 9.90°	M = 0.294
CLmax = 2.10	CMmin = -0.40	CDmax = 0.73
αLmax = 19.6°	ξ = 0.300	Mmax = 1.379
αCMmin = 9.5°	-CPmax = 10.8	αMmax = 15.8°

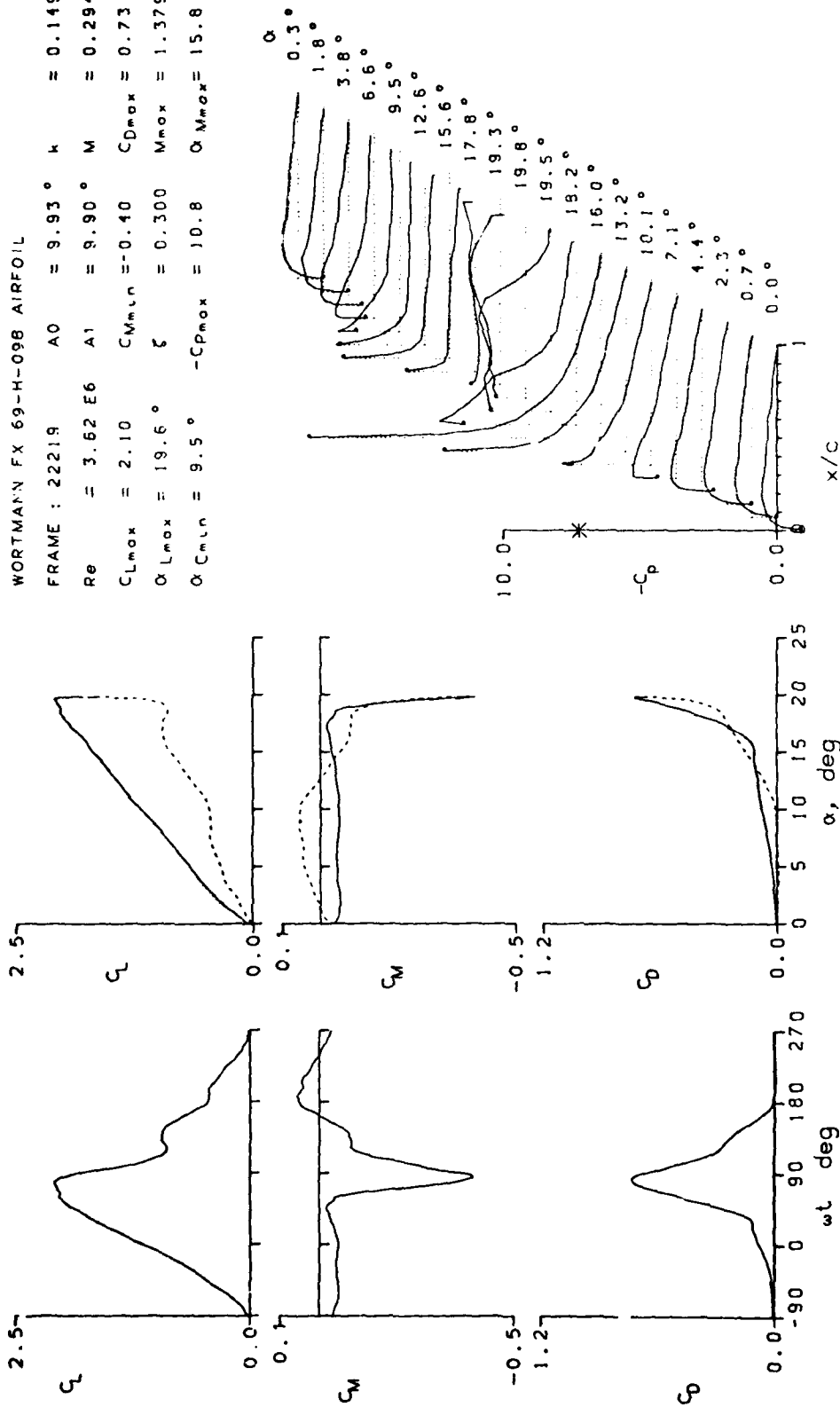


Figure 14.- Continued.

WORTMANN FX 69-M-098 AIRFOIL

FRAME : 22307	AO = 9.95°	k = 0.025
Re = 3.85 E6	AI = 4.90°	M = 0.301
CLmax = 1.53	CLmin = -0.08	CDmax = 0.15
αLmax = 13.8°	ξ = -0.108	Mmax = 1.330
αCLmin = 9.8°	-CDmax = 9.9	αVMmax = 13.9°

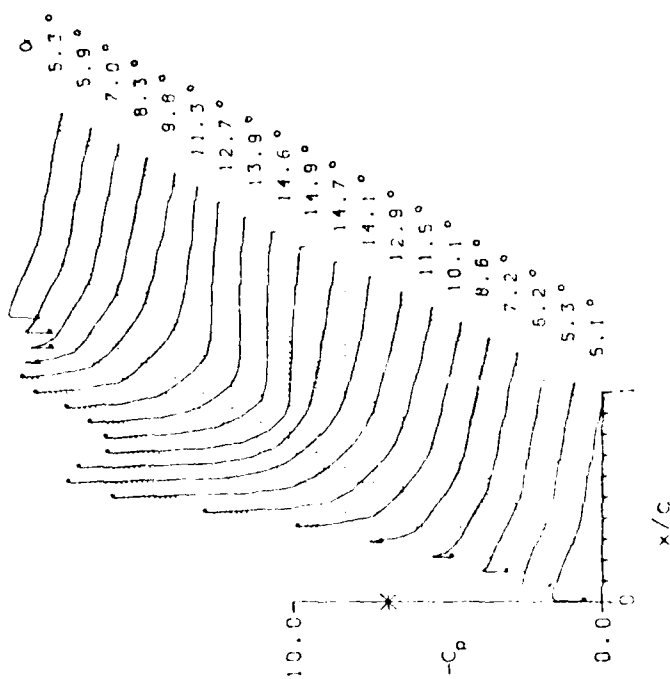
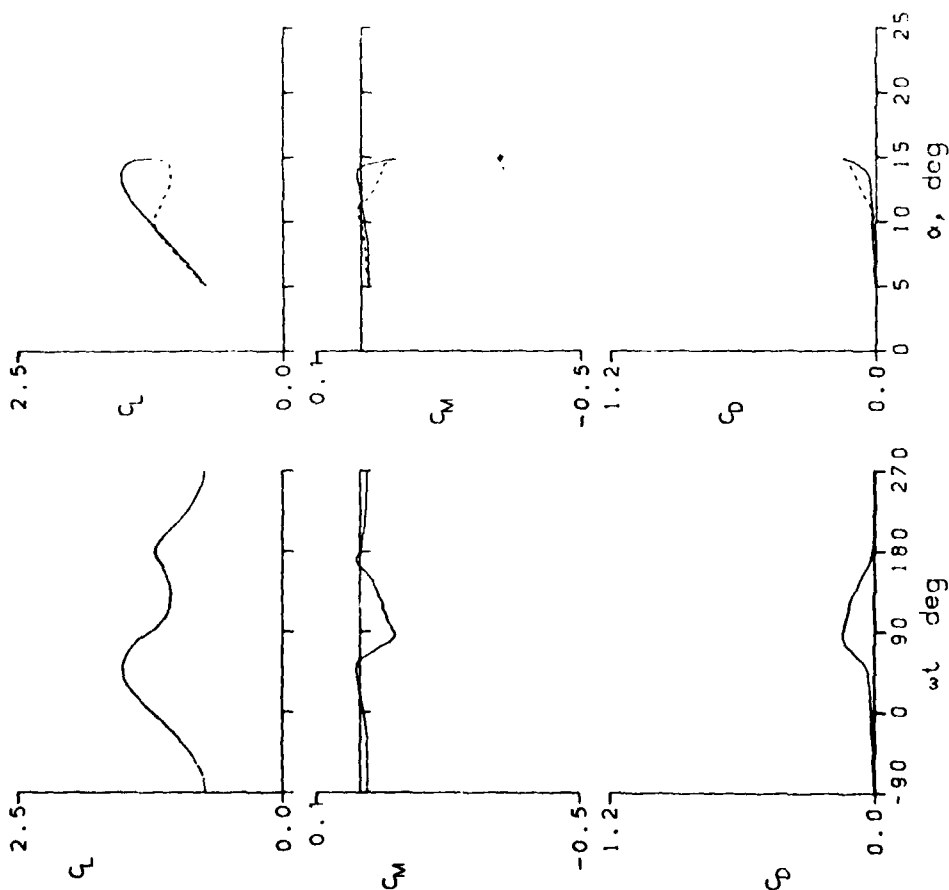


Figure 14.- Continued.

WORTMAN FX 69-M-098 AIRFOIL
 FRAME : 22308 AC = 9.96° k = 0.049
 Re = 0.86 E6 A' = 4.90° M = 0.303
 CLmax = 1.60 CMmax = 0.16 CDmax = 0.30
 α CLmax = 15.9° ξ = 0.043 Vmax = 1.370
 α CMmax = 9.8° -CDmax = 10.2 α Vmax = 13.9°

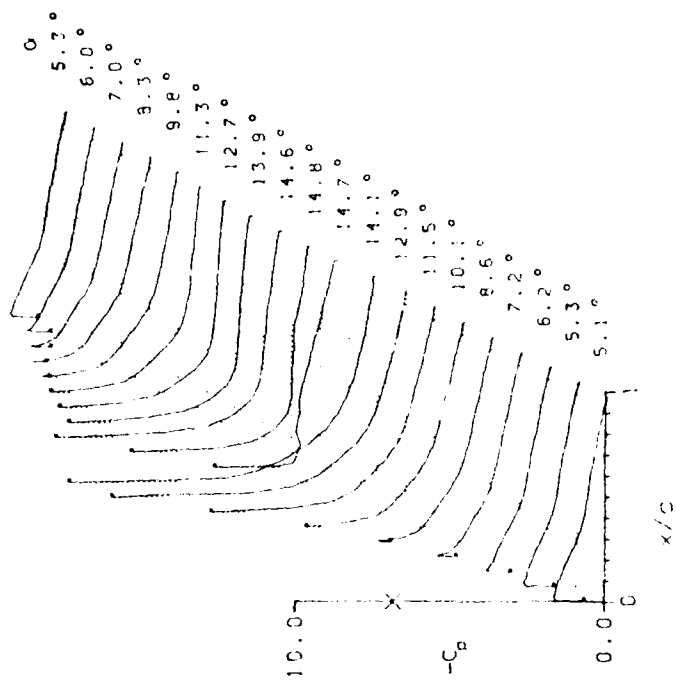
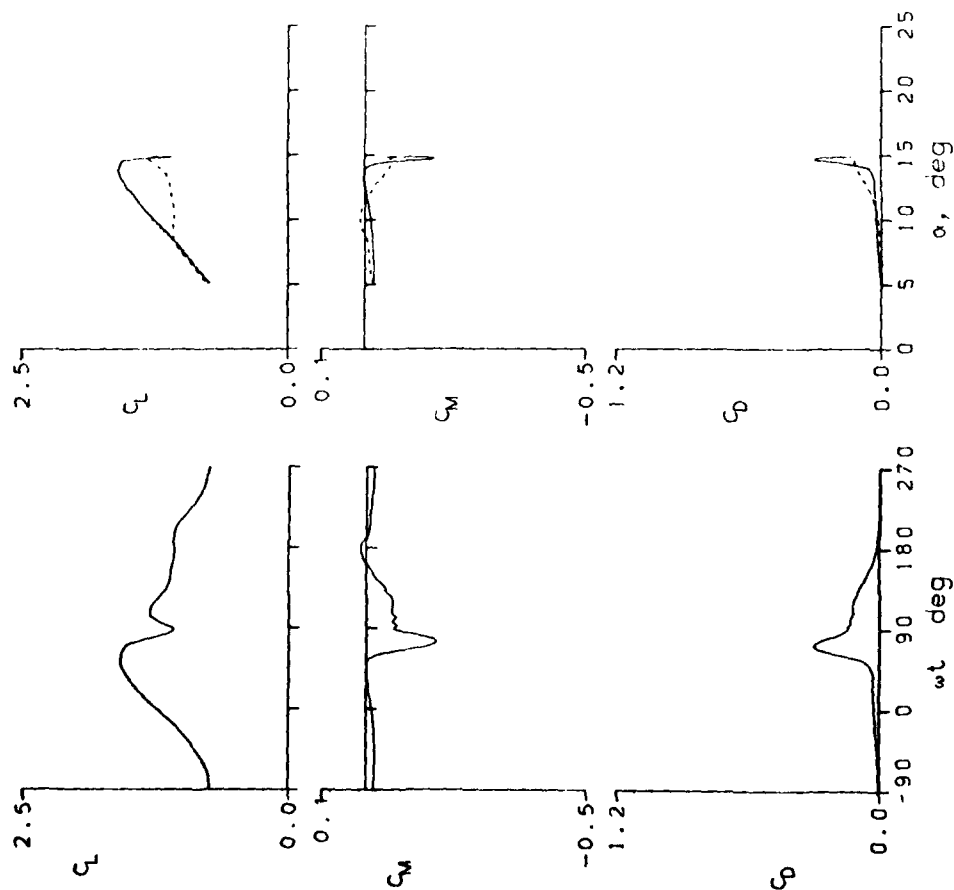


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 22309	$A_0 = 9.97^\circ$	$\kappa = 0.098$
$Re = 3.05 \times 10^6$	$A^* = 4.90^\circ$	$M = 0.303$
$C_{Lmax} = 2.32$	$C_{Mmax} = 0.12$	$C_{Dmax} = 0.12$
$\alpha_{Lmax} = 14.4^\circ$	$\alpha^* = 0.200$	$M_{max} = 1.397$
$\alpha_{C_{lin}} = 9.8^\circ$	$-C_{Dmax} = 10.4$	$\alpha_{Mmax} = 14.1^\circ$

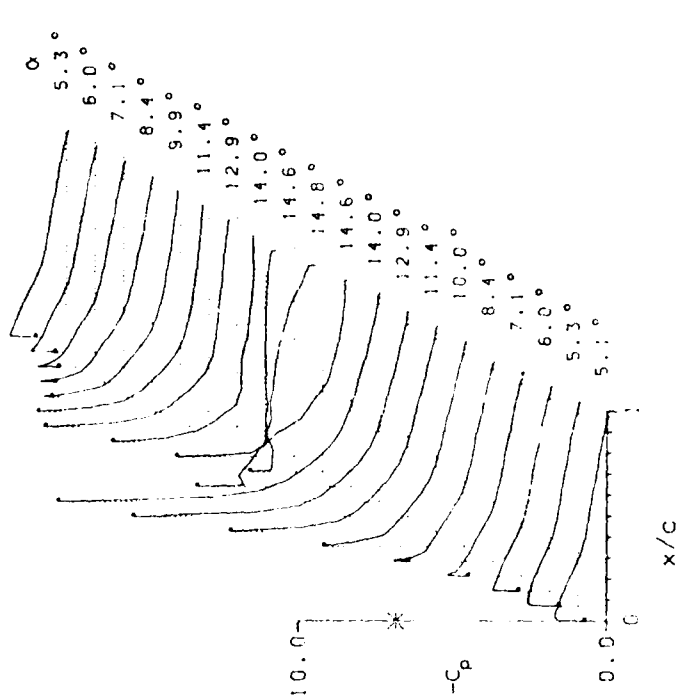
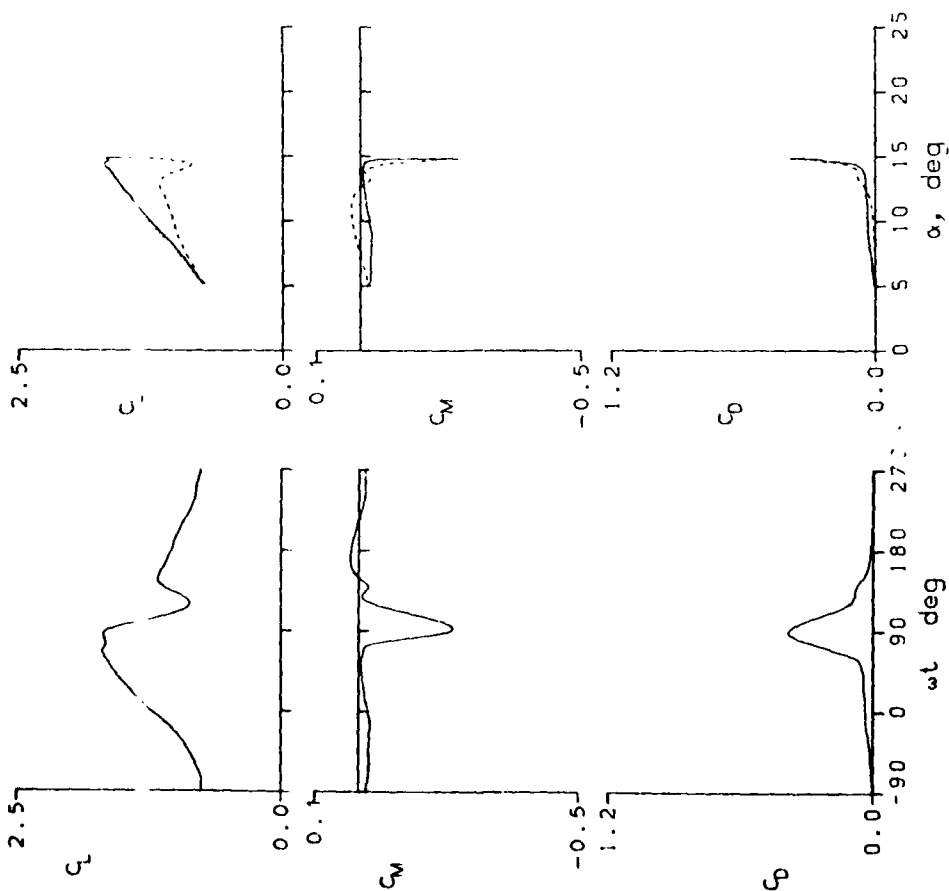


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 22311 $A_0 = 9.98^\circ$ $h = 0.148$
 $Re = 3.85 \text{ E}6$ $A_1 = 4.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.74$ $C_{Mmin} = -0.26$ $C_{Dmax} = 0.41$
 $\alpha_{Lmax} = 14.6^\circ$ $\xi = 0.057$ $M_{max} = 1.399$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Dmax} = 10.4$ $\alpha_{Mmax} = 14.1^\circ$

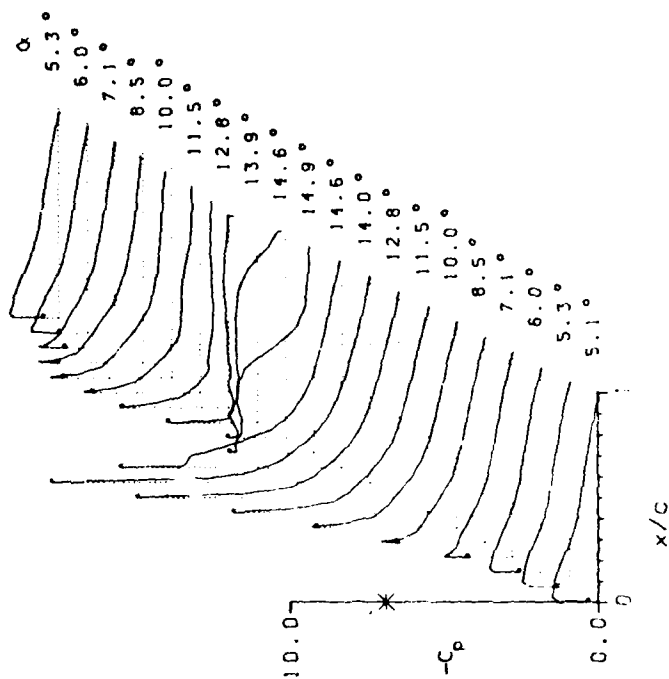
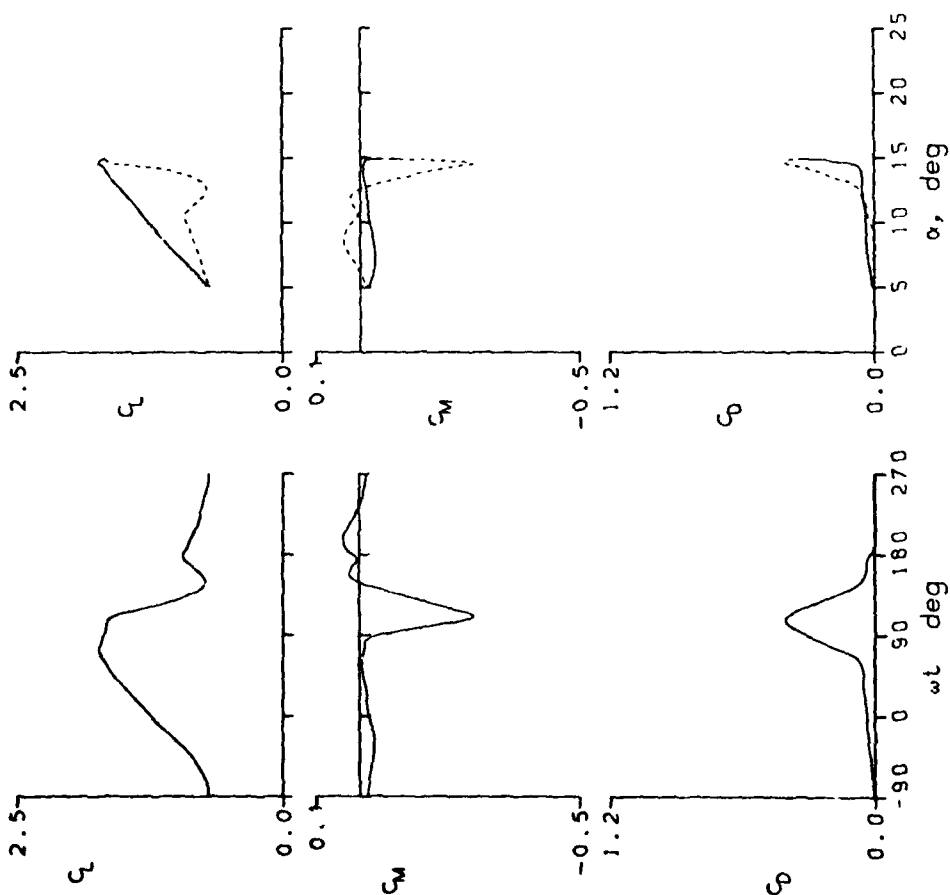


Figure 14.- Continued.

WORTMANN FX 69-M-098 AIRFOIL

FRAME : 22312 AC = 9.92° k = 0.196
 RE = 7.85 E6 A1 = 4.92° M = 0.303
 CLmax = 1.84 CMmin = -0.31 CDmax = 0.45
 αLmax = 14.6° S = -0.005 Mmax = 1.386
 αCLmin = 9.7° -CDmax = 10.3 αMmax = 13.9°

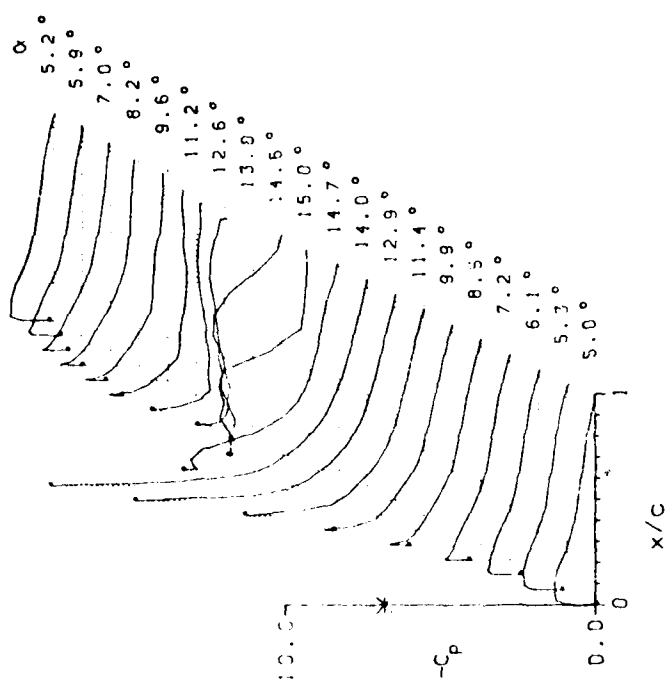
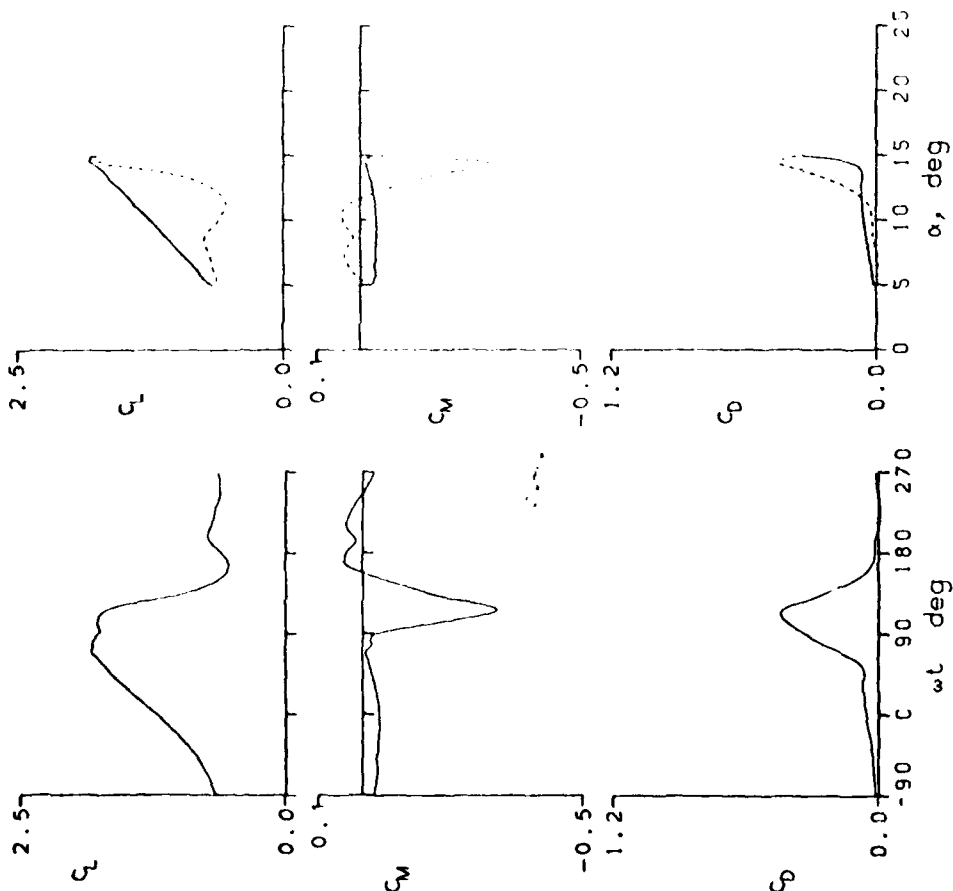


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23021 $A_0 = 14.95^\circ$ $k = 0.025$

$Re = 3.79 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.298$

$C_{Lmax} = 1.55$ $C_{Mmin} = -0.14$ $C_{Dmax} = 0.32$

$\alpha_{Lmax} = 14.0^\circ$ $\xi = 0.134$ $M_{max} = 1.316$

$\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 14.0^\circ$

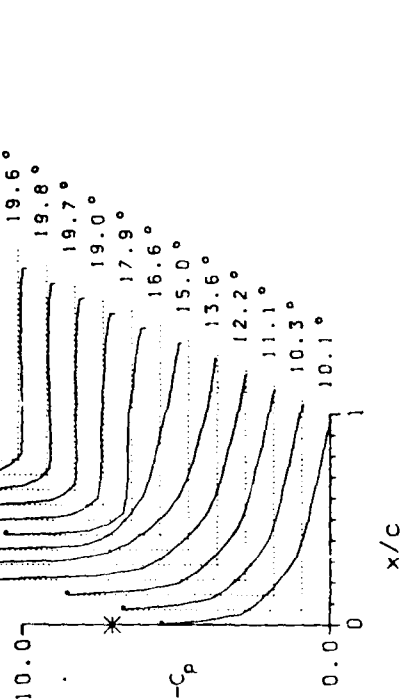
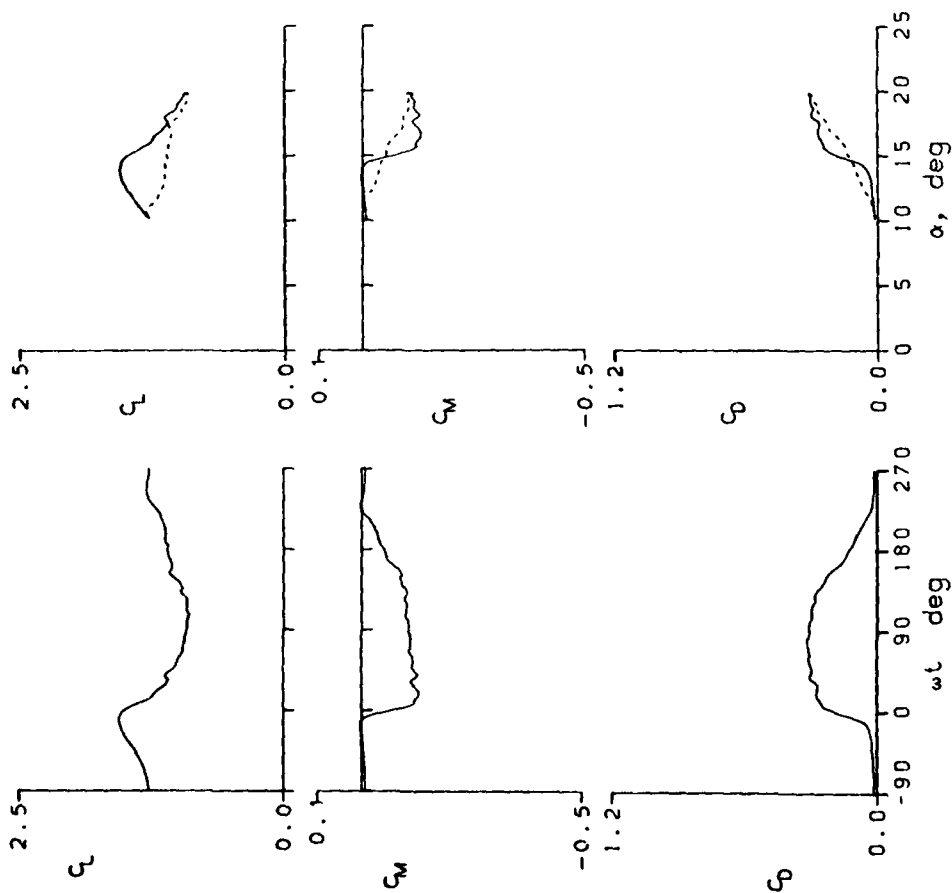


Figure 14.- Continued.

WESTMANN FX 59-H-09B AIRFOIL
 FRAME : 23022 $\alpha_0 = 14.94^\circ$ $k = 0.050$
 $Re = 3.75 \times 10^6$ $A_1 = 4.91^\circ$ $M = 0.297$
 $C_{L-ox} = 1.67$ $C_{M-ox} = -0.21$ $C_{D-ox} = 0.43$
 $C_{L-max} = 15.2^\circ$ $C_{M-max} = 0.347$ $C_{D-max} = 1.354$
 $\alpha_{C_{L-max}} = 14.7^\circ$ $\alpha_{C_{M-max}} = 10.4^\circ$ $\alpha_{C_{D-max}} = 14.0^\circ$

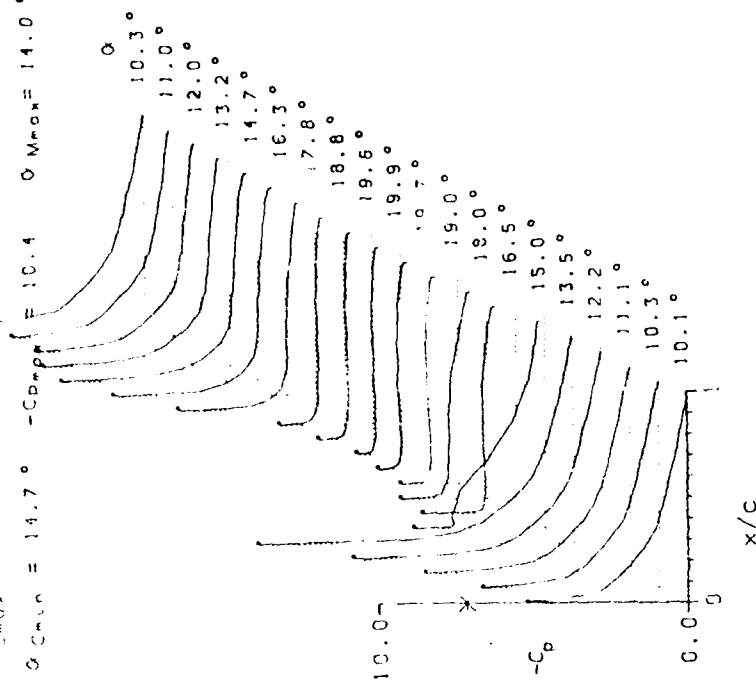
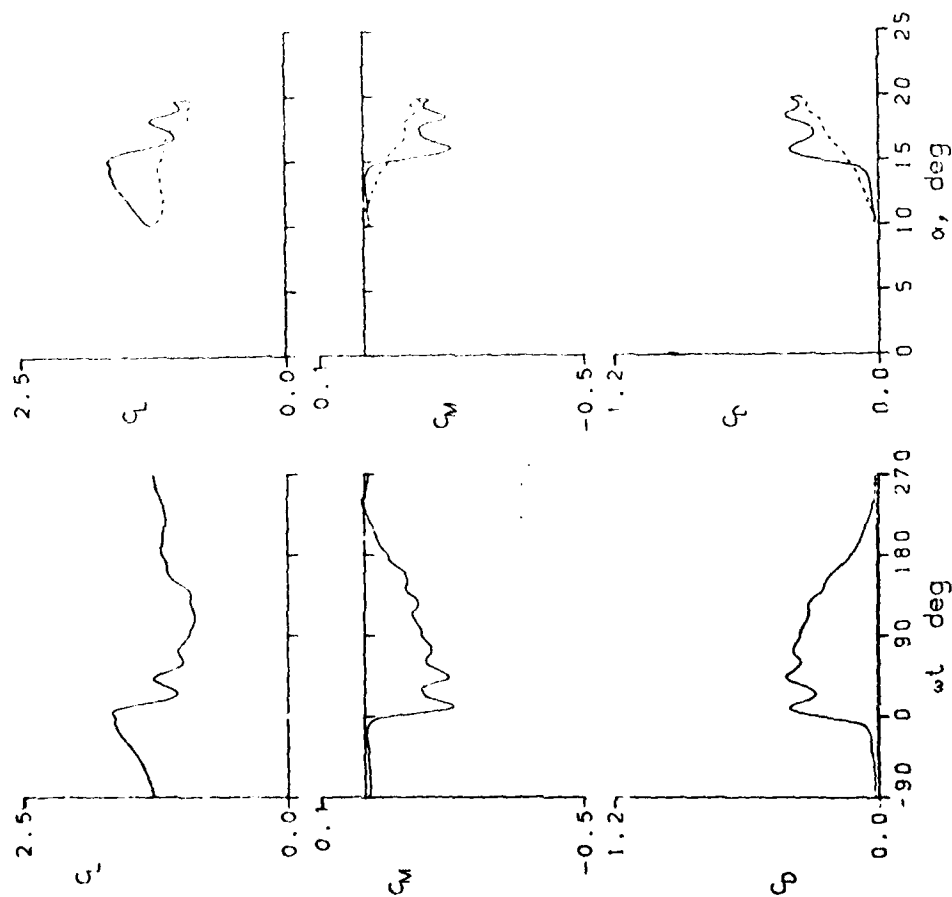


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23023	$A_0 = 14.94^\circ$	$k = 0.100$
$Re = 3.72 \text{ E} 6$	$A_1 = 4.90^\circ$	$M = 0.295$
$C_{Lmax} = 1.87$	$C_{Mmin} = -0.33$	$C_{Dmax} = 0.57$
$\alpha_{Lmax} = 17.0^\circ$	$\xi = 0.742$	$M_{max} = 1.376$
$\alpha_{C_{Lmin}} = 14.8^\circ$	$-C_{Dmax} = 10.8$	$\alpha_{Mmax} = 14.5^\circ$

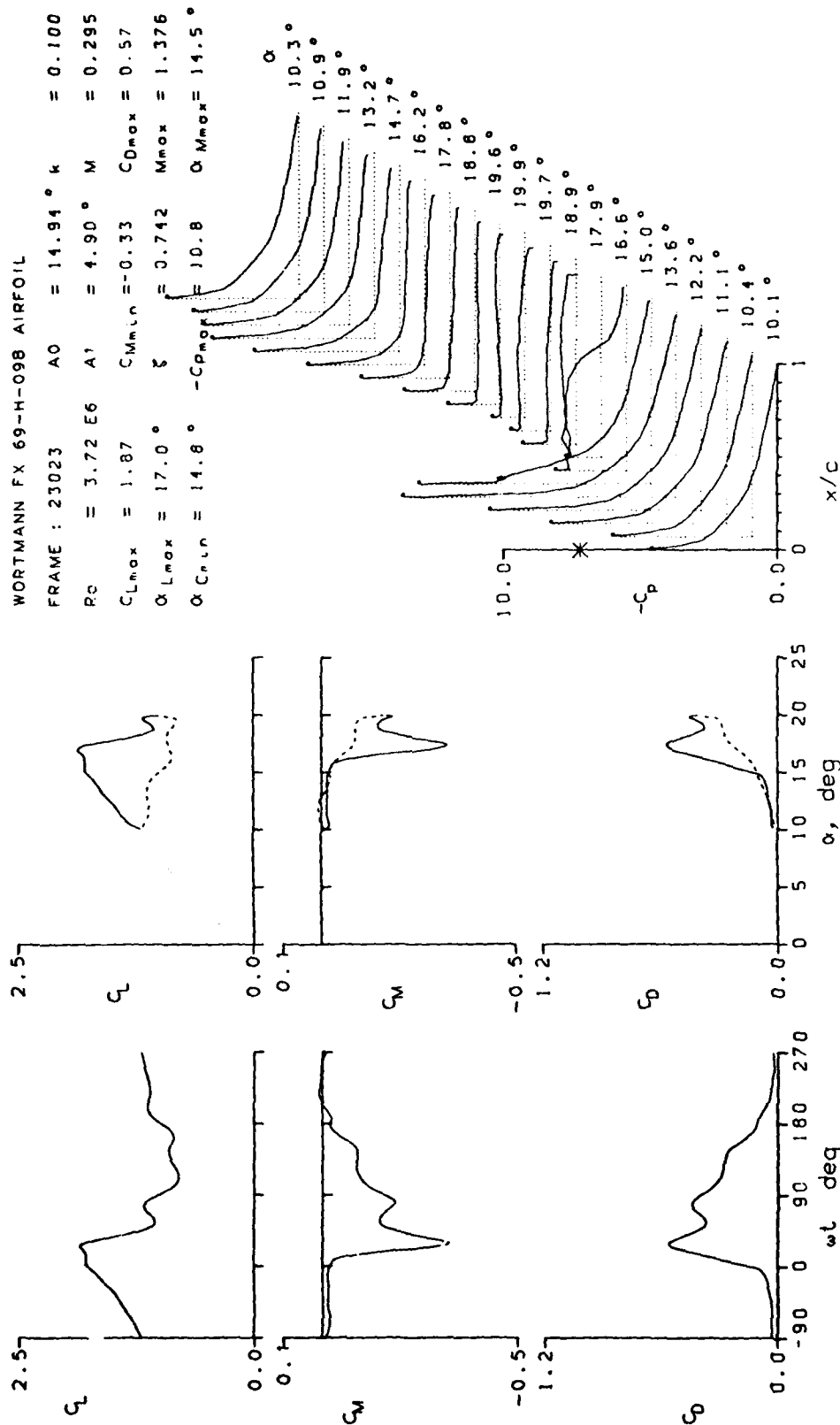


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL

FRAME : 23100 $\alpha_0 = 14.93^\circ$ $\mu = 0.152$

$\mu_0 = 3.57^\circ$ E_6 $A' = 4.92^\circ$ $M = 0.292$

$C_{Lmax} = 2.00$ $C_{Mmin} = -0.38$ $C_{Dmax} = 0.67$

$\alpha_{Lmax} = 18.3^\circ$ $\xi = 0.818$ $M_{max} = 1.376$

$\alpha_{C_{Lmax}} = 14.8^\circ$ $-C_{Dmax} = 11.0$ $\alpha_{M_{max}} = 14.9^\circ$

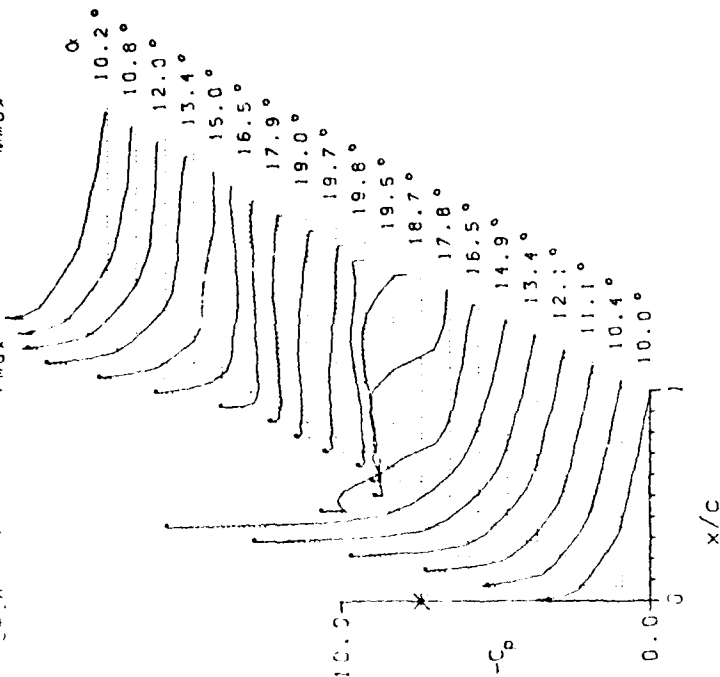
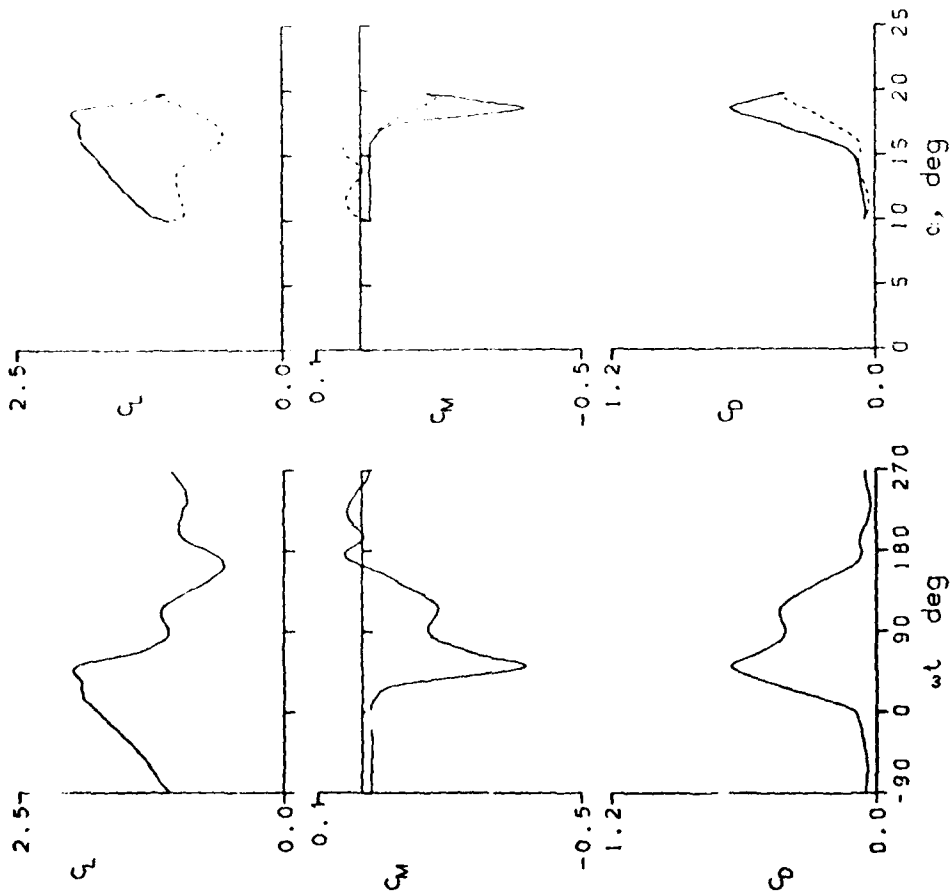


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23101	$A_0 = 14.94^\circ$	$k = 0.205$
$R_0 = 3.62$	$E_6 A_1 = 4.07^\circ$	$M = 0.287$
$C_{Lmax} = 2.18$	$C_{Mmin} = -0.44$	$C_{Dmax} = 0.76$
$\alpha_{Lmax} = 19.4^\circ$	$\zeta = -0.012$	$M_{max} = 1.364$
$\alpha_{Cmin} = 14.7^\circ$	$-C_{Dmax} = 11.3$	$\alpha_{Mmax} = 15.7^\circ$

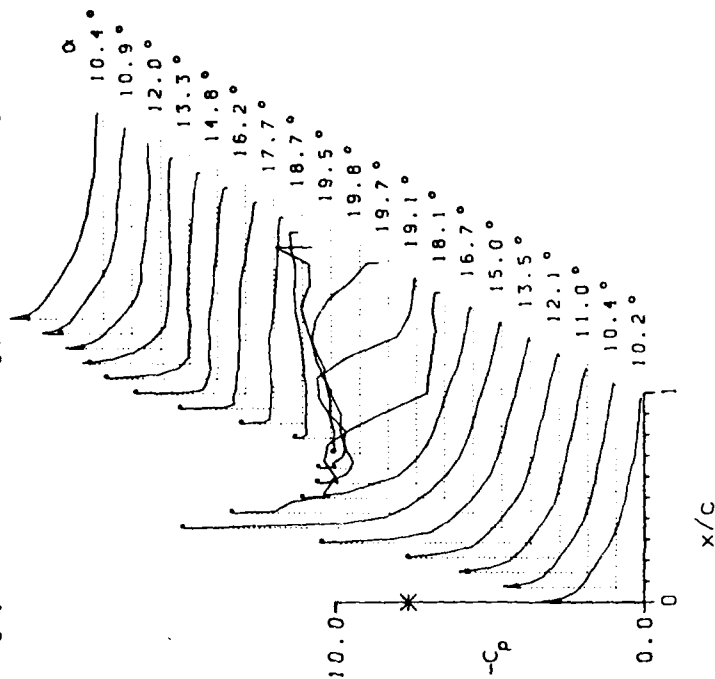
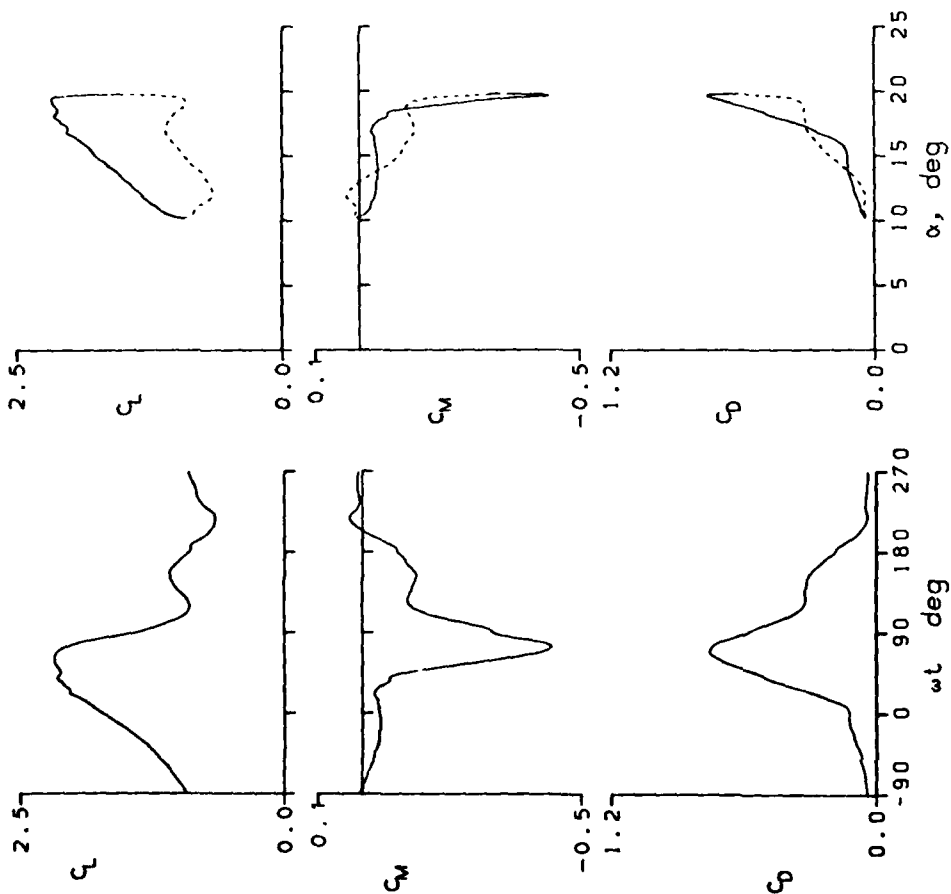


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FAIRVE : 23:07	A0 = 4.95°	k = 0.099
P0 = 3.80 E6	A1 = 5.00°	M = 0.300
C _{Lmax} = 1.25	C _{Mmin} = -0.04	C _{Dmax} = 0.03
α _{Lmax} = 9.9°	ξ = 0.287	M _{max} = 0.829
α _{Cmin} = 4.7°	-C _{Dmax} = 5.1	α _{Mmax} = 9.9°

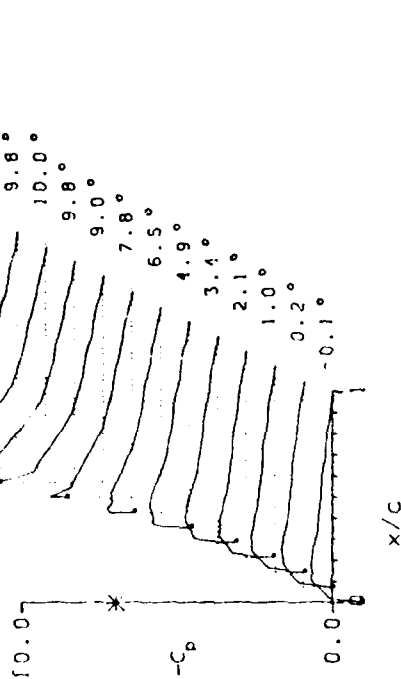
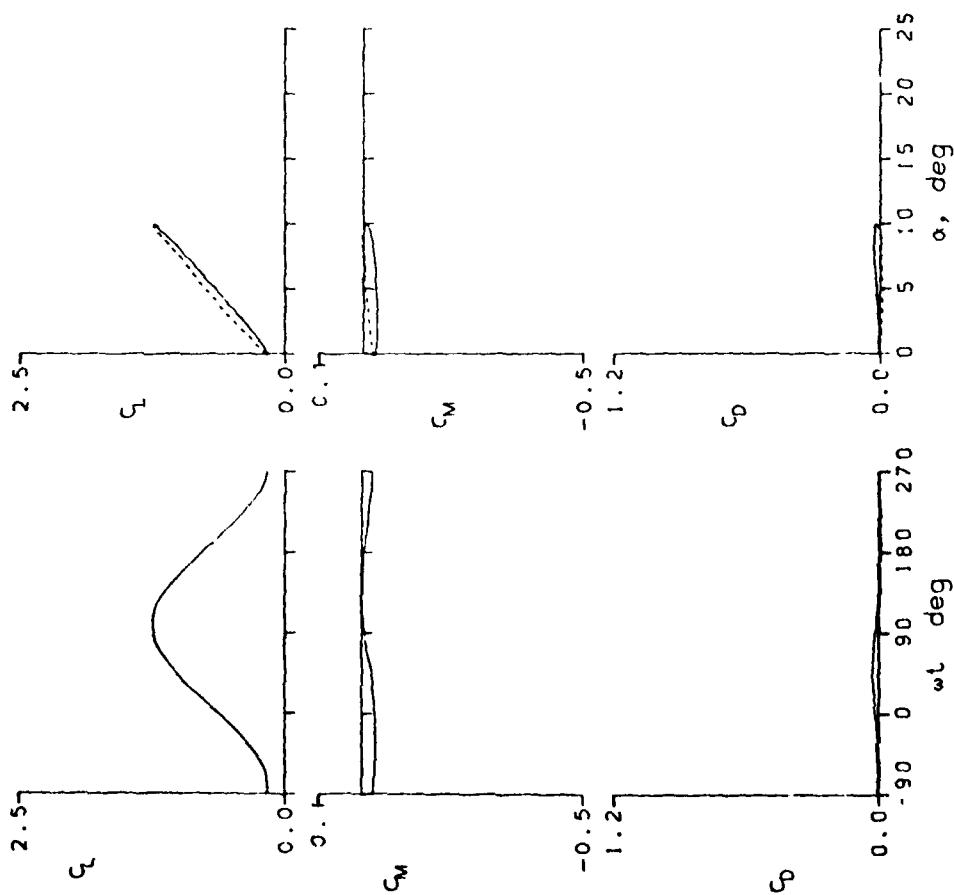


Figure 14.- Continued.

WORTMANN FX 69-H-09B AIRFOIL

FRAME : 23109	A0 = 4.97°	k = 0.197
Re = 3.79 E6	A1 = 5.01°	M = 0.300
C _{Lmax} = 1.27	C _{Mmin} = -0.05	C _{Dmax} = 0.04
α _{Lmax} = 10.0°	ξ = 0.660	M _{max} = 0.868
α _{Cmin} = 4.7°	-C _{Dmax} = 5.5	α _{Mmax} = 9.9°

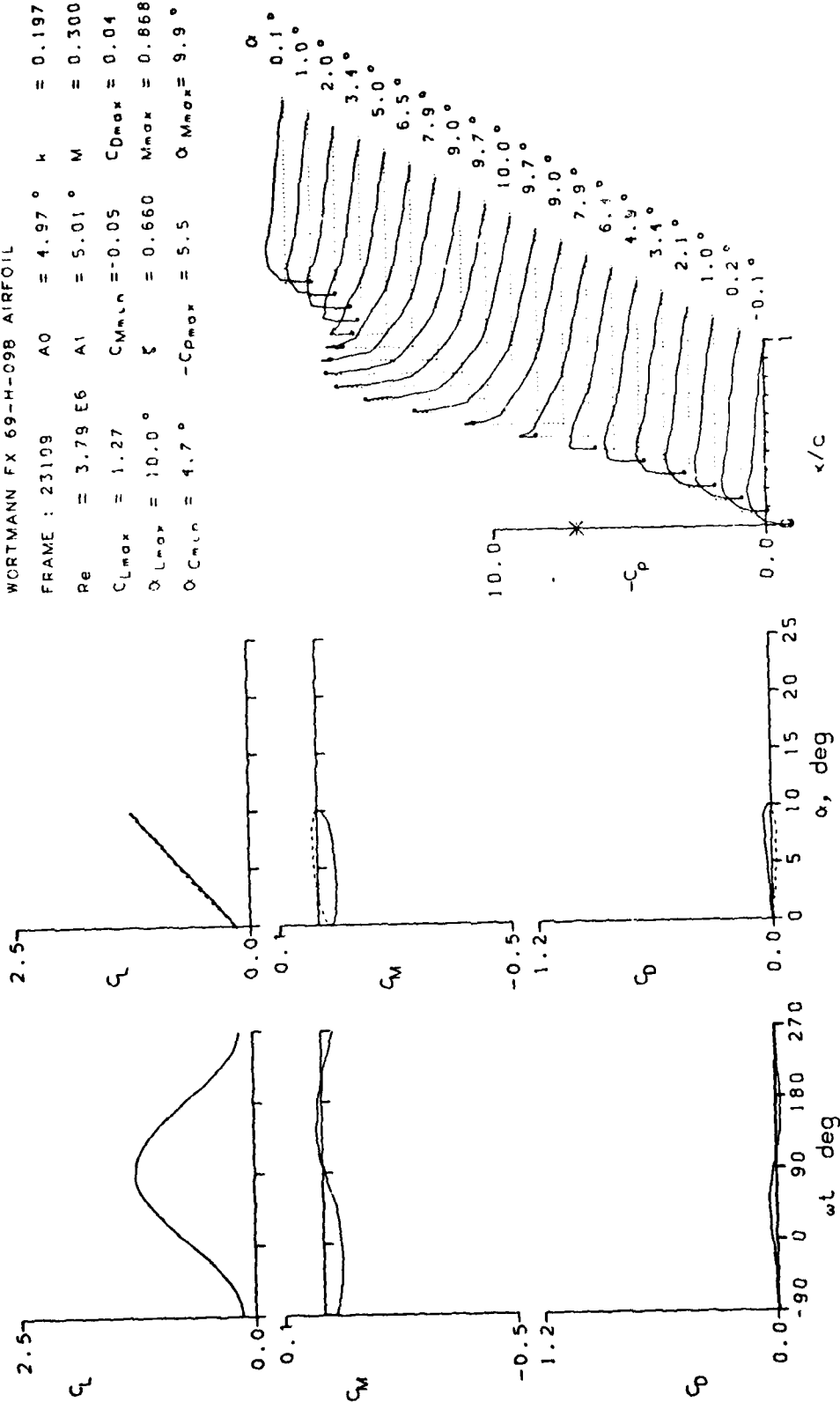


Figure 14.- Continued.

WORTMANN FX 69-M-098 AIRFOIL
 FRAME : 23117 $A_0 = 4.84^\circ$ $k = 0.098$
 $Re = 3.80 \times 10^6$ $A_1 = 10.05^\circ$ $M = 0.300$
 $C_{Lmax} = 1.74$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.32$
 $\alpha_{Lmax} = 14.3^\circ$ $\xi = 0.226$ $M_{max} = 1.387$
 $\alpha_{Cmin} = 4.4^\circ$ $-C_{Dmax} = 10.4$ $\alpha_{Mmax} = 14.4^\circ$

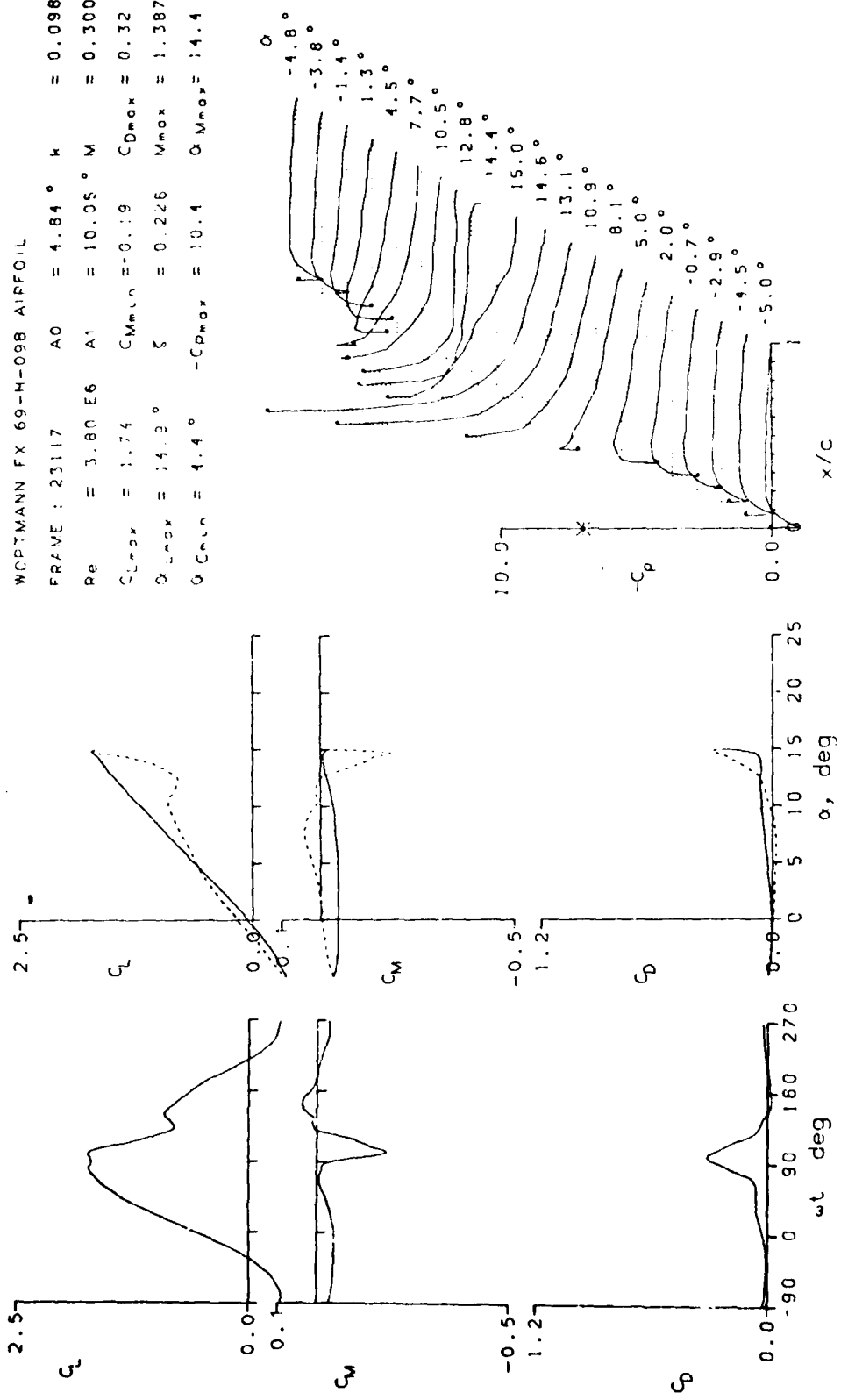


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23201 $A_0 = 3.66^\circ$ $k = 0.100$
 $Re = 3.95 \text{ E}6$ $A_1 = 10.10^\circ$ $M = 0.299$
 $C_{Lmax} = 1.69$ $C_{Mmin} = -0.05$ $C_{Dmax} = 0.07$
 $\alpha_{Lmax} = 13.9^\circ$ $\xi = 0.275$ $M_{max} = 1.396$
 $\alpha_{Cmin} = 3.2^\circ$ $-C_{Pmax} = 10.6$ $\alpha_{Mmax} = 13.9^\circ$

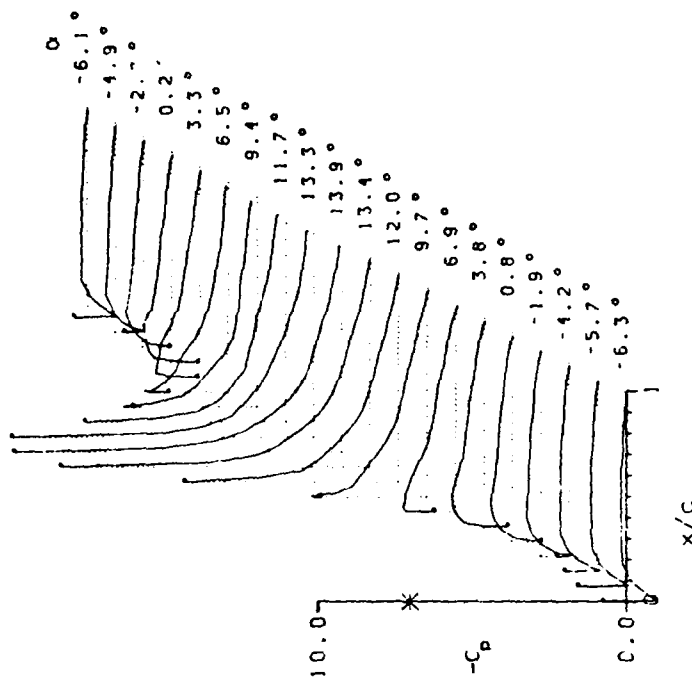
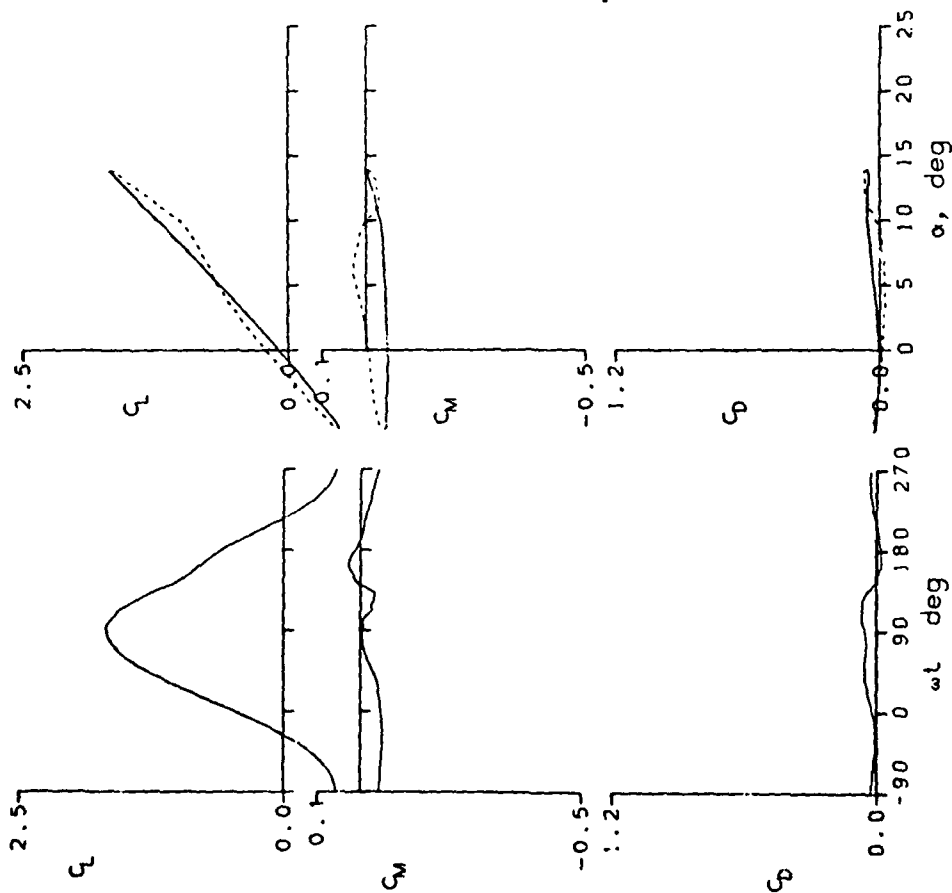


Figure 14.- Continued.

MCRTMANN FX 69-M-098 AIRFOIL

FRAME : 23206 $A_0 = 3.07^\circ$ $k = 0.050$
 $Re = 3.92 \text{ E}6$ $A_1 = 10.19^\circ$ $M = 0.299$
 $C_{Lmax} = 1.62$ $C_{Mmin} = -0.05$ $C_{Dmax} = 0.04$
 $\alpha_{Lmax} = 13.2^\circ$ $\xi = 0.147$ $M_{max} = 1.356$
 $\alpha_{Cmin} = 2.6^\circ$ $-C_{Dmax} = 10.3$ $\alpha_{Mmax} = 13.4^\circ$

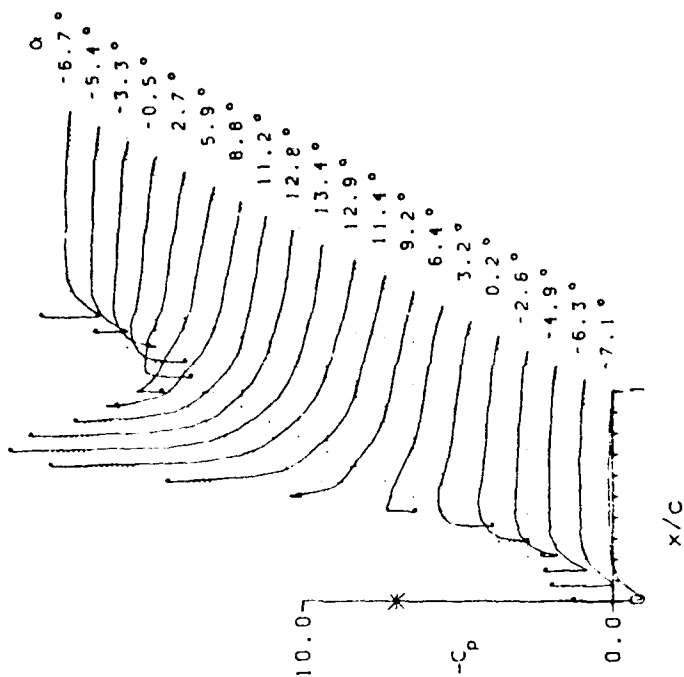
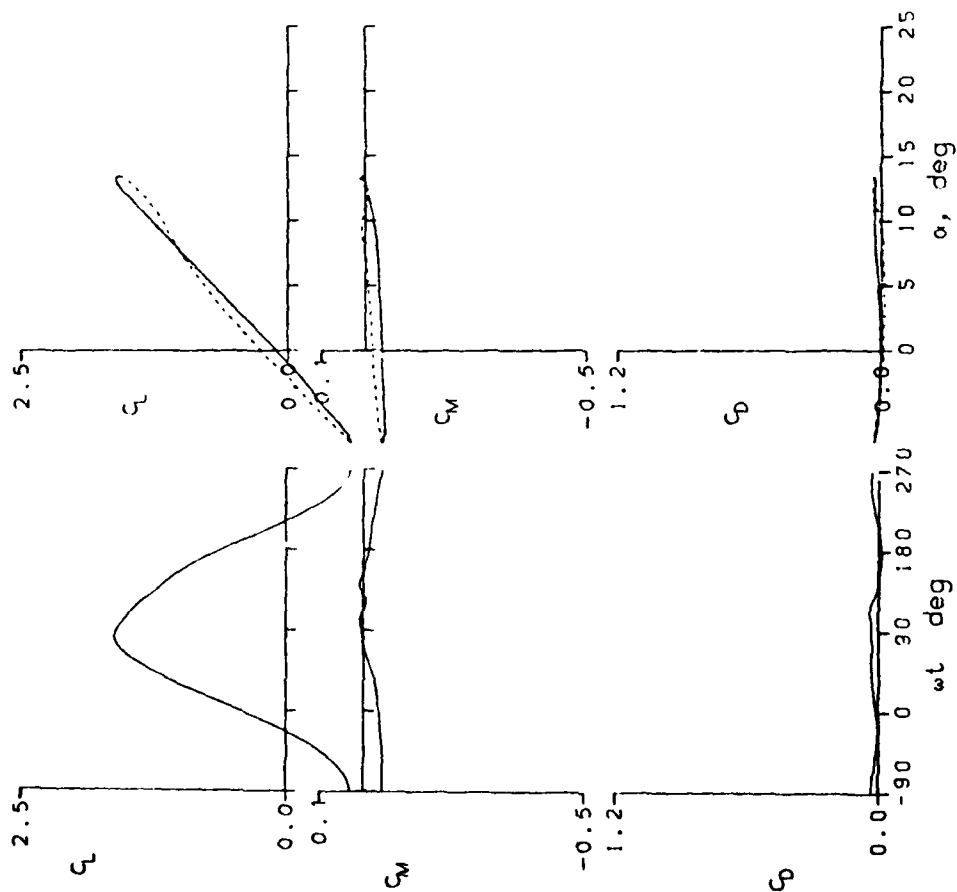


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 23208 $A_0 = 3.15^\circ$ $k = 0.100$
 $Re = 3.91 E6$ $A^* = 10.16^\circ$ $M = 0.300$
 $C_{Lmax} = 1.65$ $C_{VMmin} = -0.06$ $C_{Dmax} = 0.06$
 $\alpha_{Lmax} = 13.4^\circ$ $\xi = 0.319$ $M_{max} = 1.383$
 $\alpha_{Cmin} = 2.7^\circ$ $-C_{Dmax} = 10.4$ $\alpha_{Mmax} = 13.4^\circ$

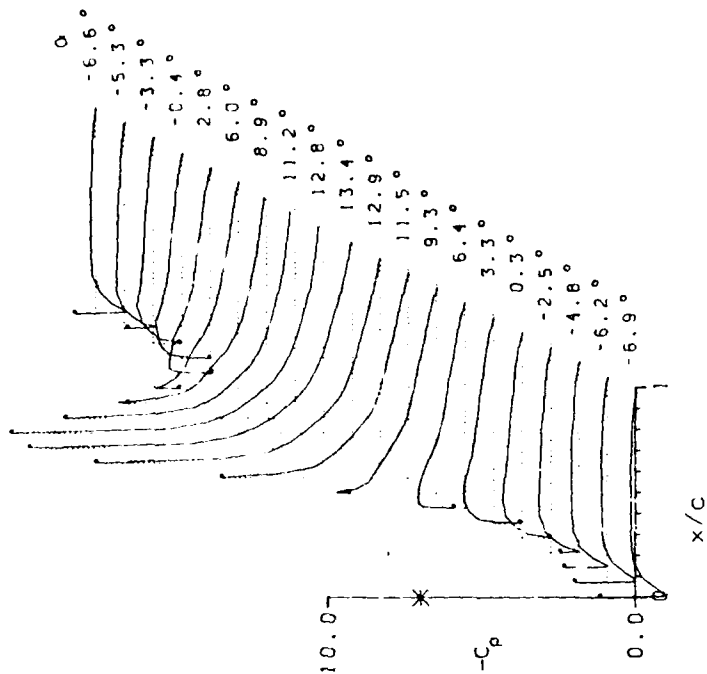
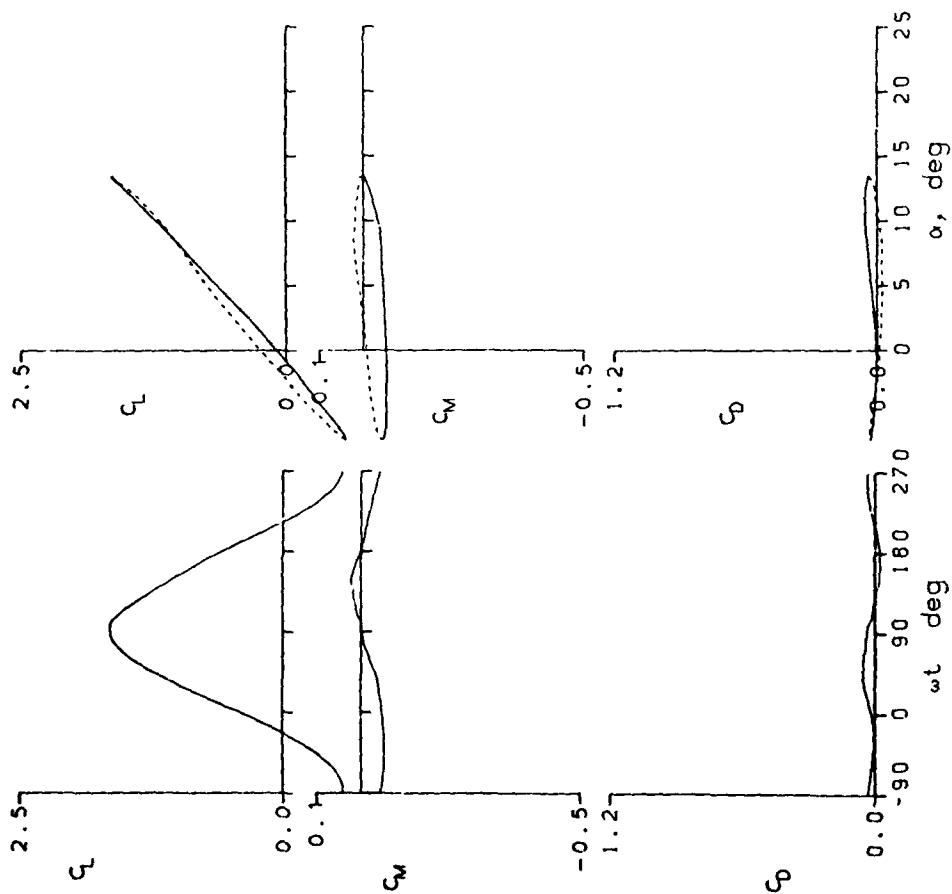


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23211	A0 = 3.06°	k = 0.149
Re = 3.90 E6	A1 = 10.17°	M = 0.300
C _{Lmax} = 1.66	C _{Mmin} = -0.07	C _{Dmax} = 0.08
α _{Lmax} = 13.1°	ξ = 0.497	M _{max} = 1.406
α _{Cmin} = 2.7°	-C _{Dmax} = 10.6	α _{Mmax} = 13.1°

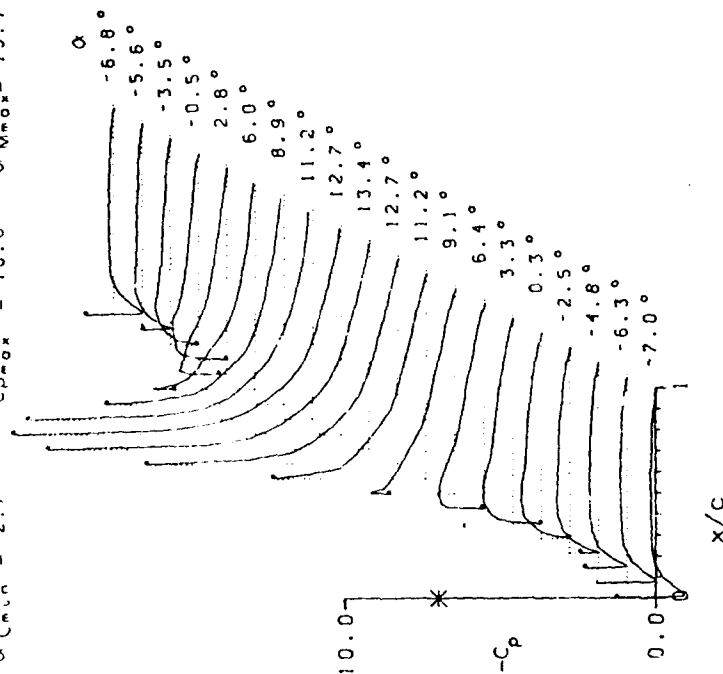
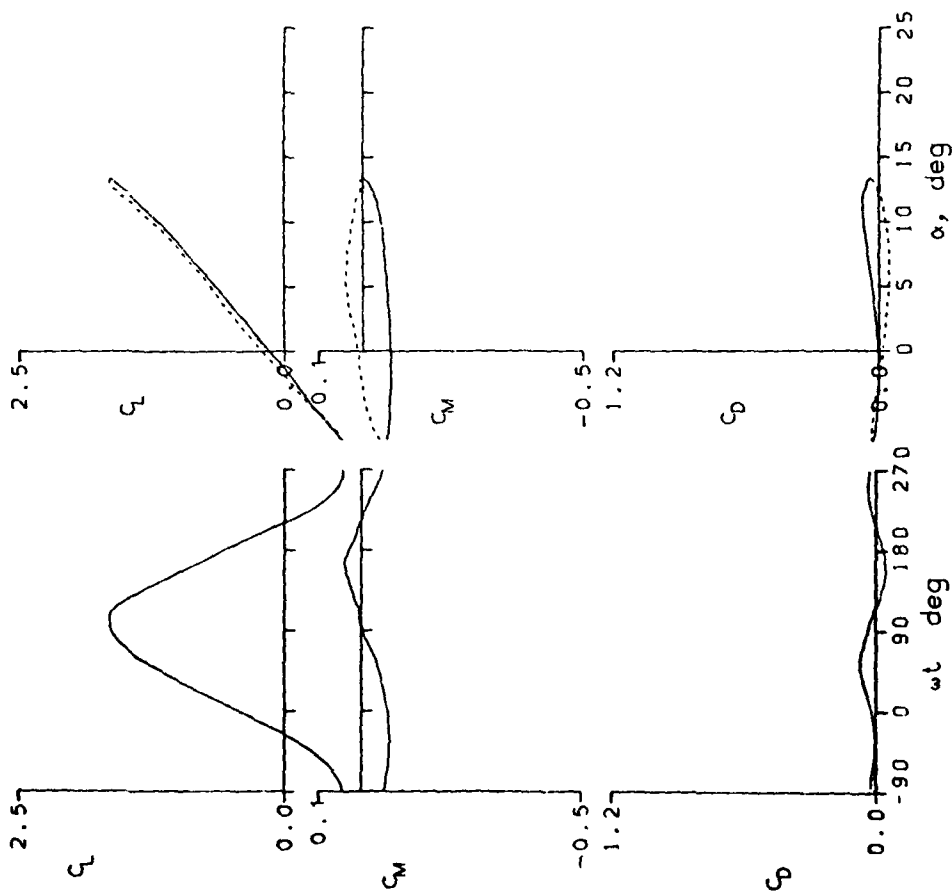


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL
 FRAME : 23219 $A0 = 11.95^\circ k = 0.199$
 $Re = 3.87 E6$ $A1 = 2.00^\circ M = 0.299$
 $C_{Lmax} = 1.70$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.13$
 $\alpha_{Lmax} = 13.9^\circ$ $\xi = -0.545$ $M_{max} = 1.394$
 $\alpha_{C_{min}} = 11.9^\circ$ $-C_{Pmax} = 10.6$ $\alpha_{Mmax} = 13.9^\circ$

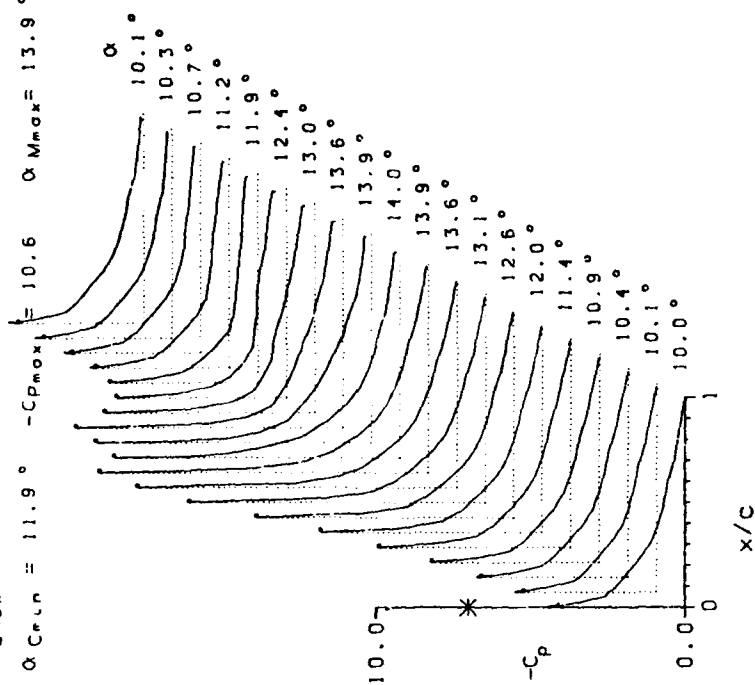
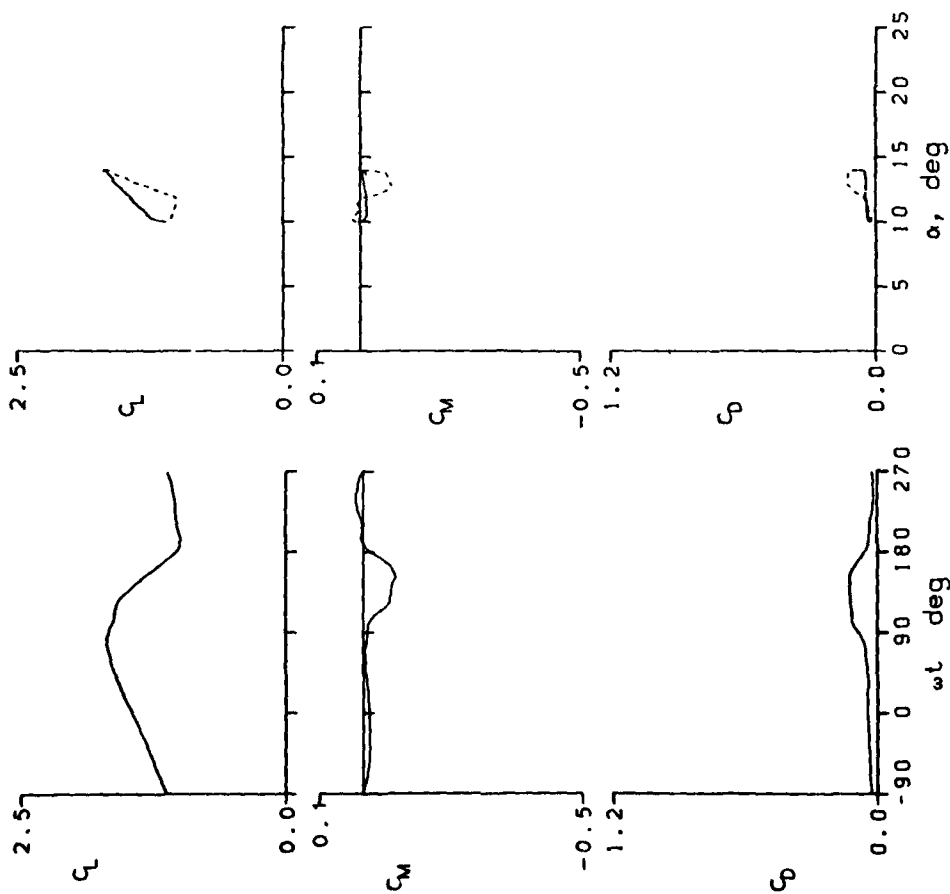


Figure 14.- Continued.

WORTMANN FX 69-H-098 AIRFOIL

FRAME : 23305	A0 = 13.98°	k = 0.200
Re = 3.83 E6	A1 = 1.98°	M = 0.298
CLmax = 1.88	CMmin = -0.27	CDmax = 0.47
αLmax = 15.9°	ξ = -0.141	Mmax = 1.385
αCMmin = 13.5°	-CDmax = 10.6	αMmax = 14.6°

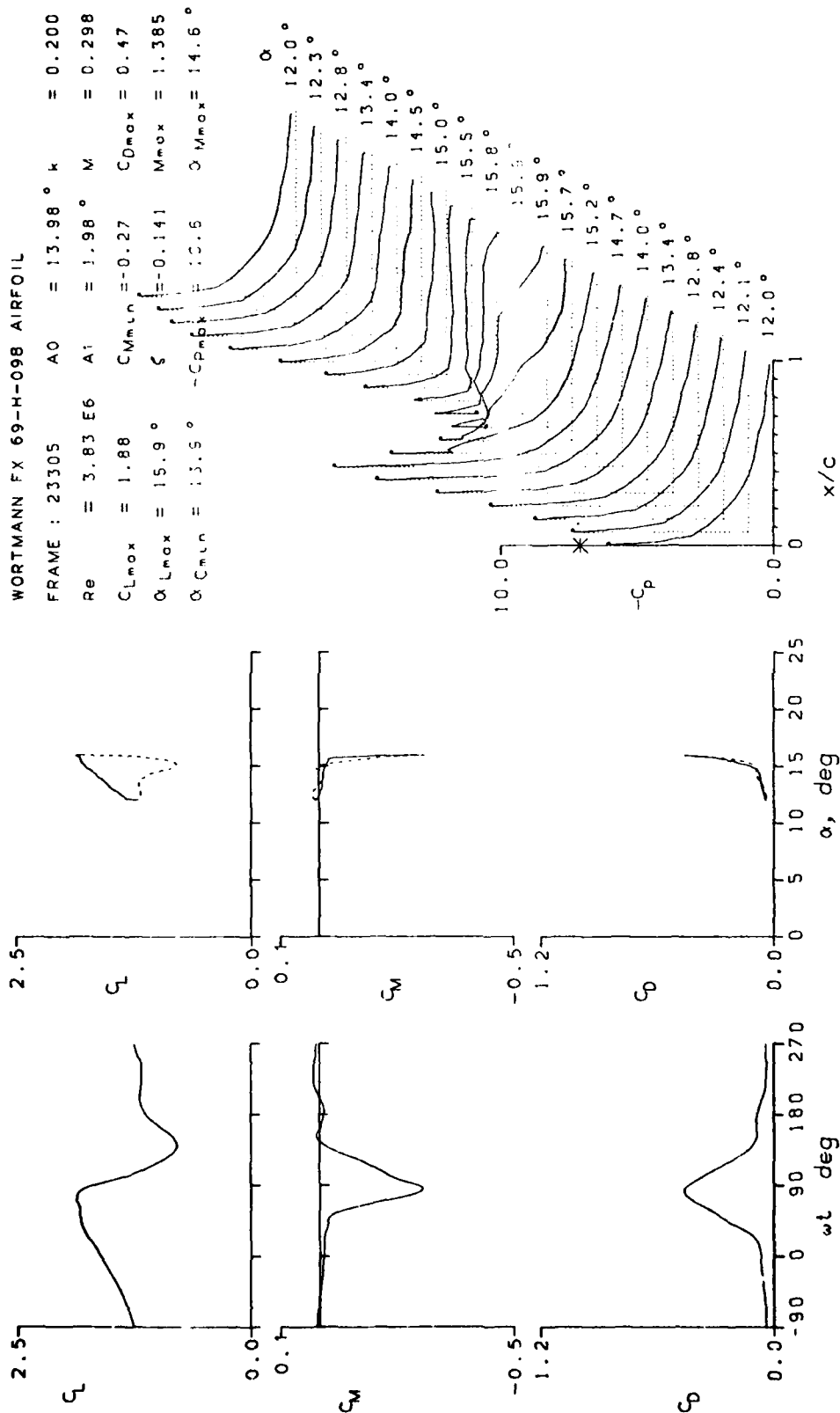


Figure 14.- Continued.

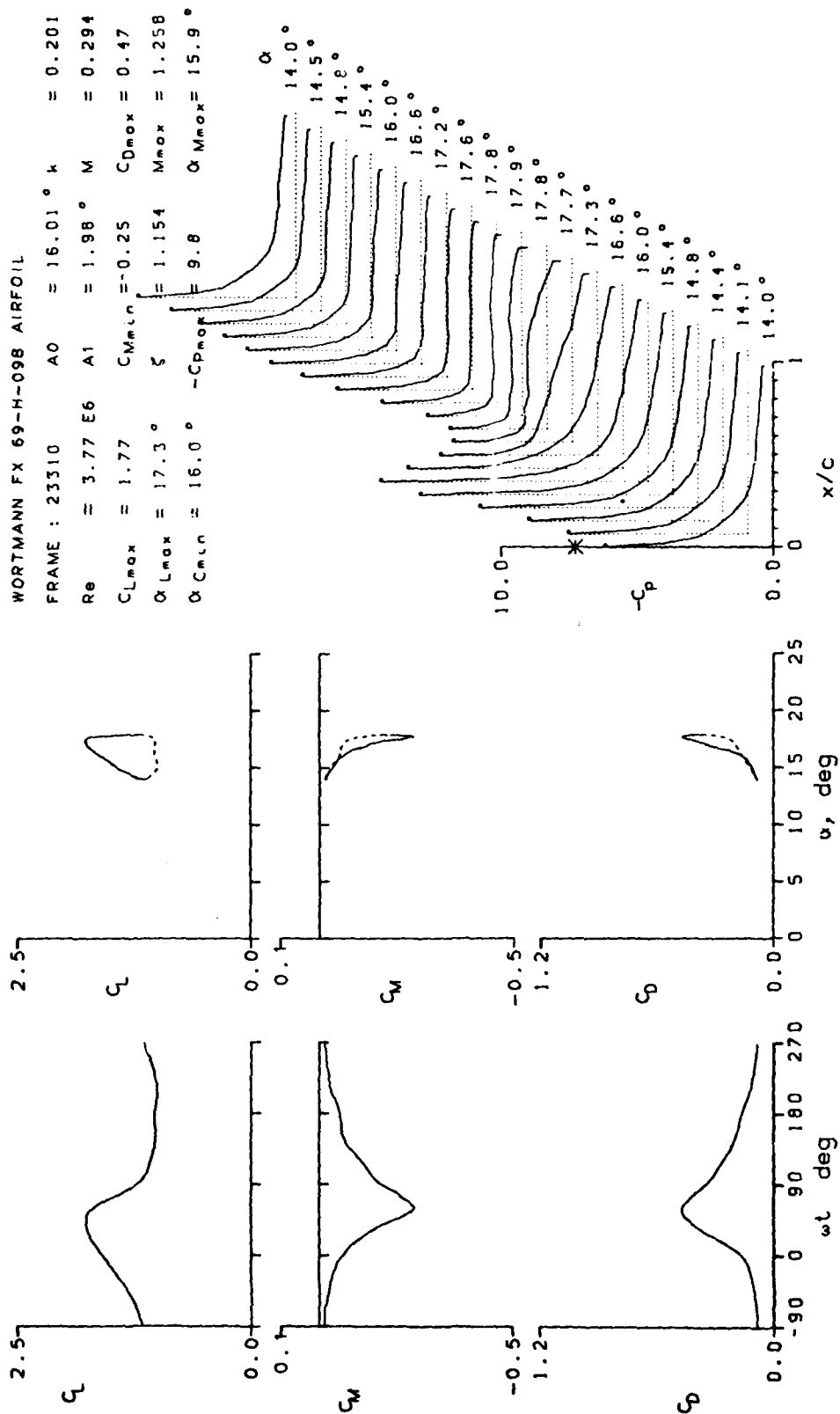


Figure 14.- Concluded.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33022 $A_0 = 14.82^\circ$ $k = 0.099$

$Re = 0.98 \text{ E}6$ $A' = 9.88^\circ$ $M = 0.073$

$C_{Lmax} = 2.52$ $C_{Mmin} = -0.49$ $C_{Dmax} = 1.05$

$\alpha_{Lmax} = 22.8^\circ$ $\xi = 0.156$ $M_{max} = 0.299$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 15.4$ $\alpha_{Mmax} = 20.8^\circ$

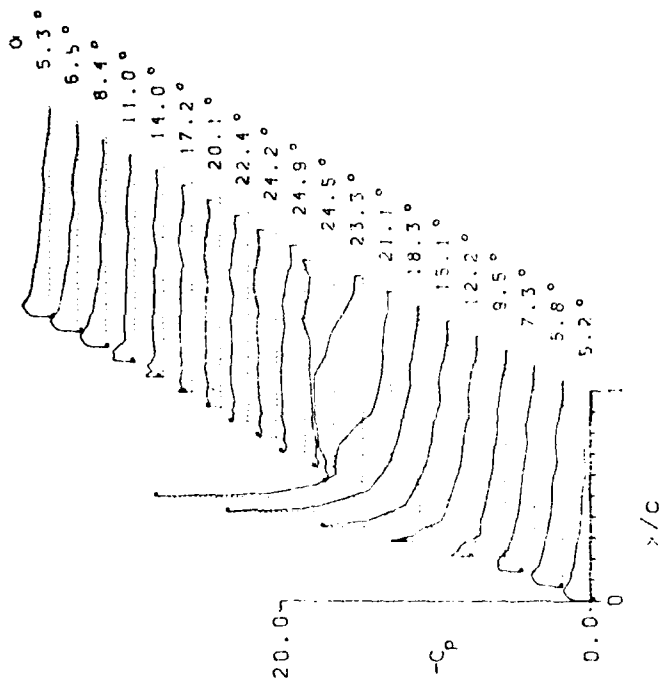
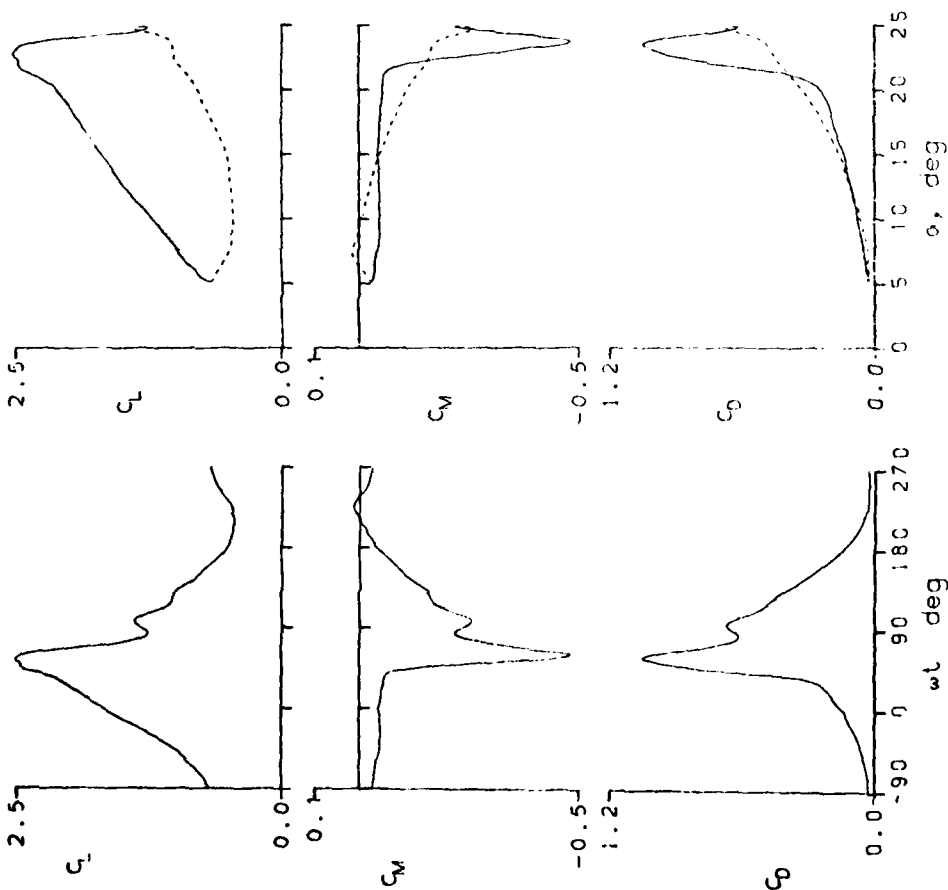


Figure 15.- Dynamic data for Sikorsky SC-1095 airfoil.

SIKORSKY SC-1095 AIRFOIL
 FRAML : 33106 $A_0 = 14.82^\circ$ $\mu = 0.098$
 $Re = 1.45 E6$ $A_1 = 9.88^\circ$ $M = 0.110$
 $C_{Lmax} = 2.50$ $C_{Mmin} = -0.49$ $C_{Dmax} = 1.05$
 $\alpha_{Lmax} = 23.3^\circ$ $\xi = 0.215$ $M_{max} = 0.478$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Pmax} = 16.3$ $\alpha_{Mmax} = 21.1^\circ$

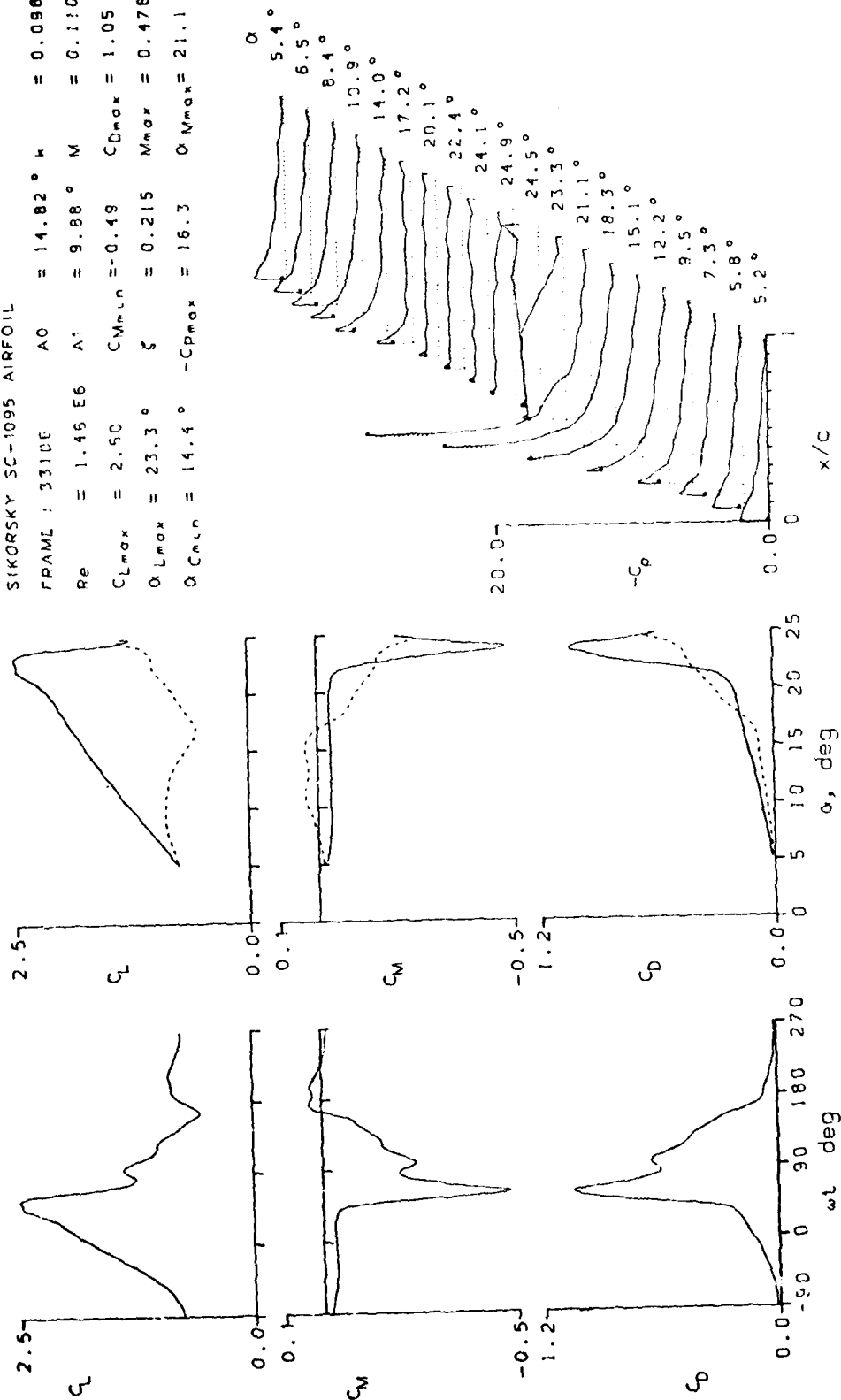


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33110	$A_0 = 14.81^\circ$	$\mu = 0.099$
$Re = 2.40 \times 10^6$	$A_1 = 9.92^\circ$	$M = 0.183$
$C_{Lmax} = 2.58$	$C_{Mmin} = -0.50$	$C_{Dmax} = 1.07$
$\alpha_{Lmax} = 22.9^\circ$	$\zeta = 0.272$	$M_{max} = 0.904$
$\alpha_{Cmin} = 14.4^\circ$	$-C_{Dmax} = 16.9$	$\alpha_{Mmax} = 20.9^\circ$

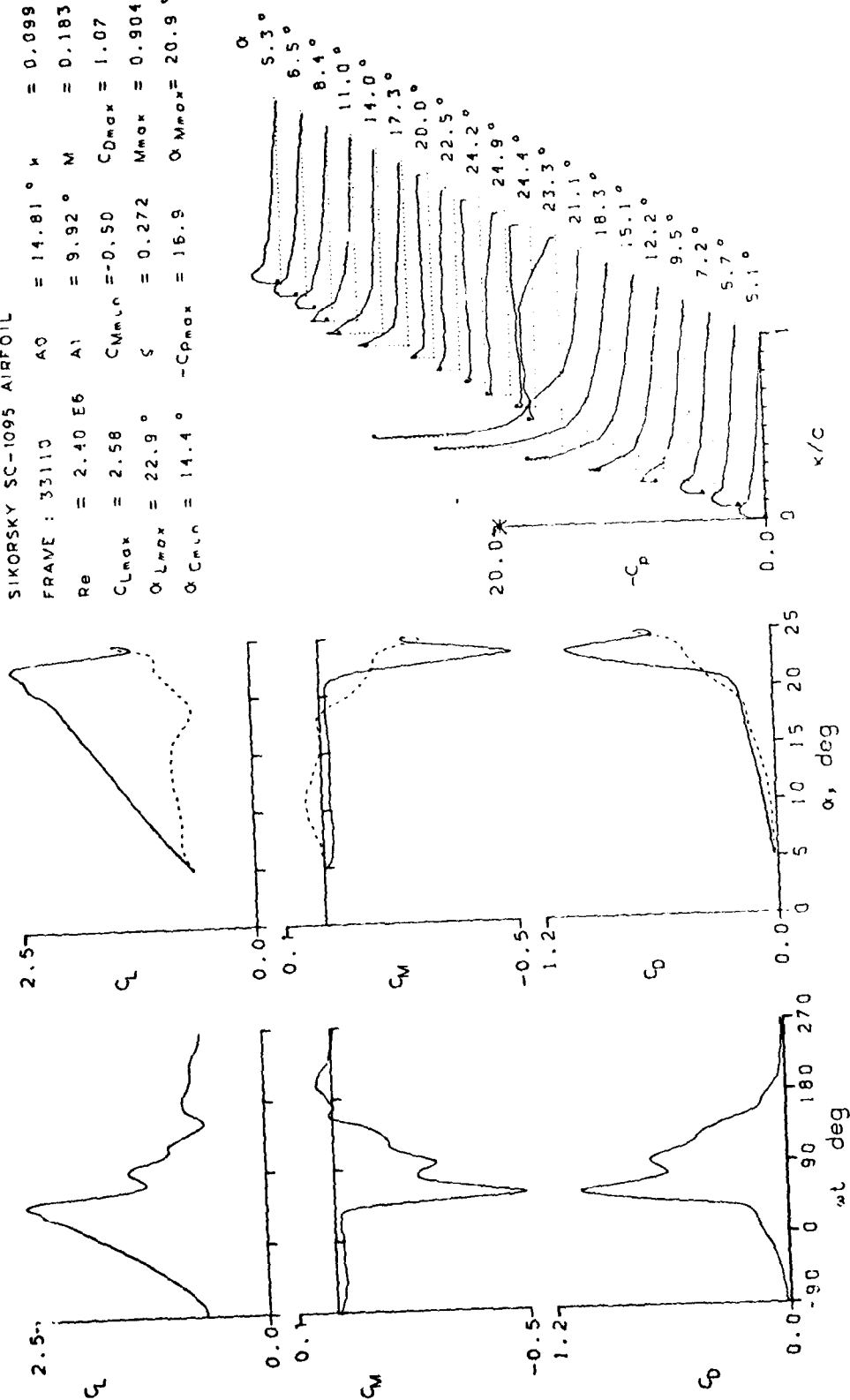


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33118	A0 = 5.97°	k = 0.050
Re = 2.39 E6	A1 = 10.05°	M = 0.182
C _{Lmax} = 1.74	C _{Mmin} = -0.06	C _{Dmax} = 0.15
α _{Lmax} = 15.2°	ξ = 0.083	M _{max} = 0.685
α _{Cmin} = 5.4°	-C _{pmax} = 10.9	α _{Mmax} = 16.2°

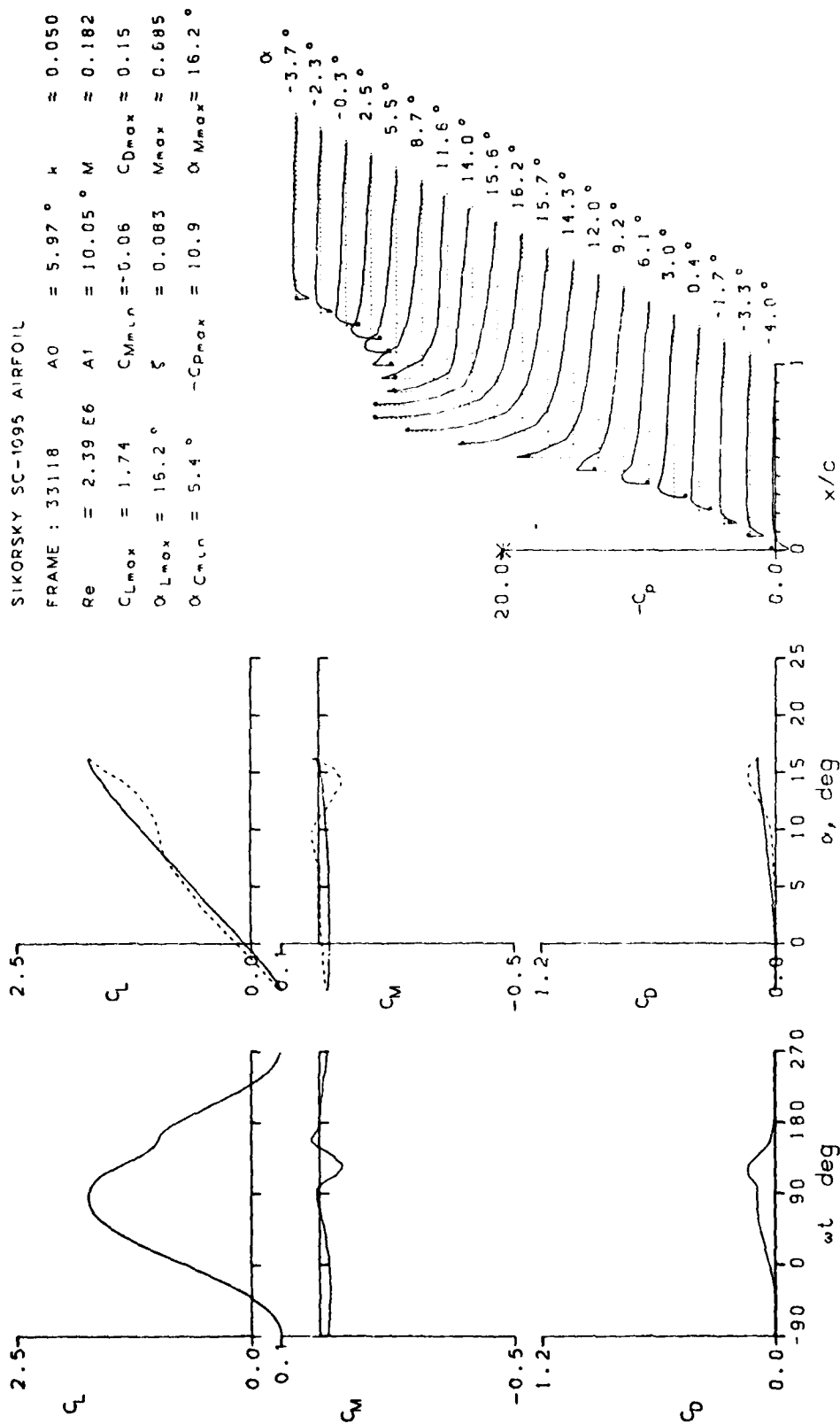


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33121 A0 = 6.03° k = 0.198
 Re = 2.41 E6 A1 = 10.00° M = 0.184
 CLmax = 1.74 CMmin = -0.07 CDmax = 0.14
 αLmax = 16.2° ξ = 0.634 Vmax = 0.690
 αCMmin = 5.4° -CDmax = 10.8 αMmax = 16.1°

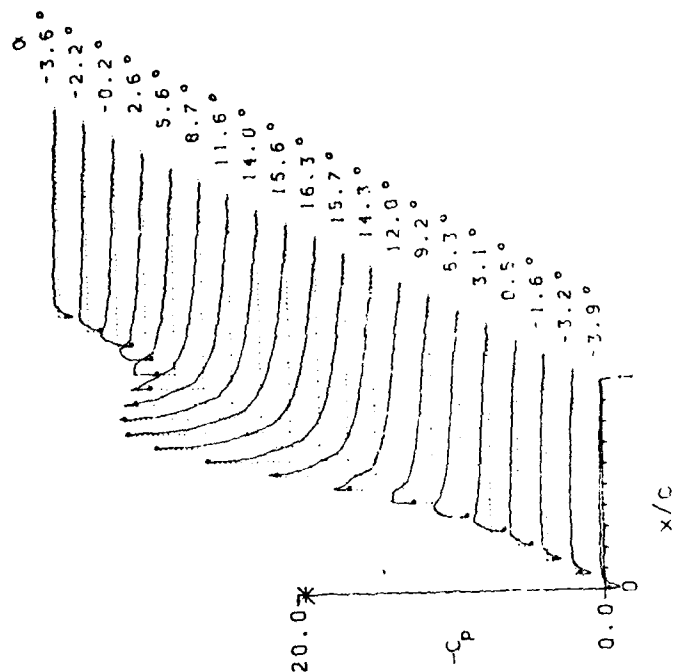
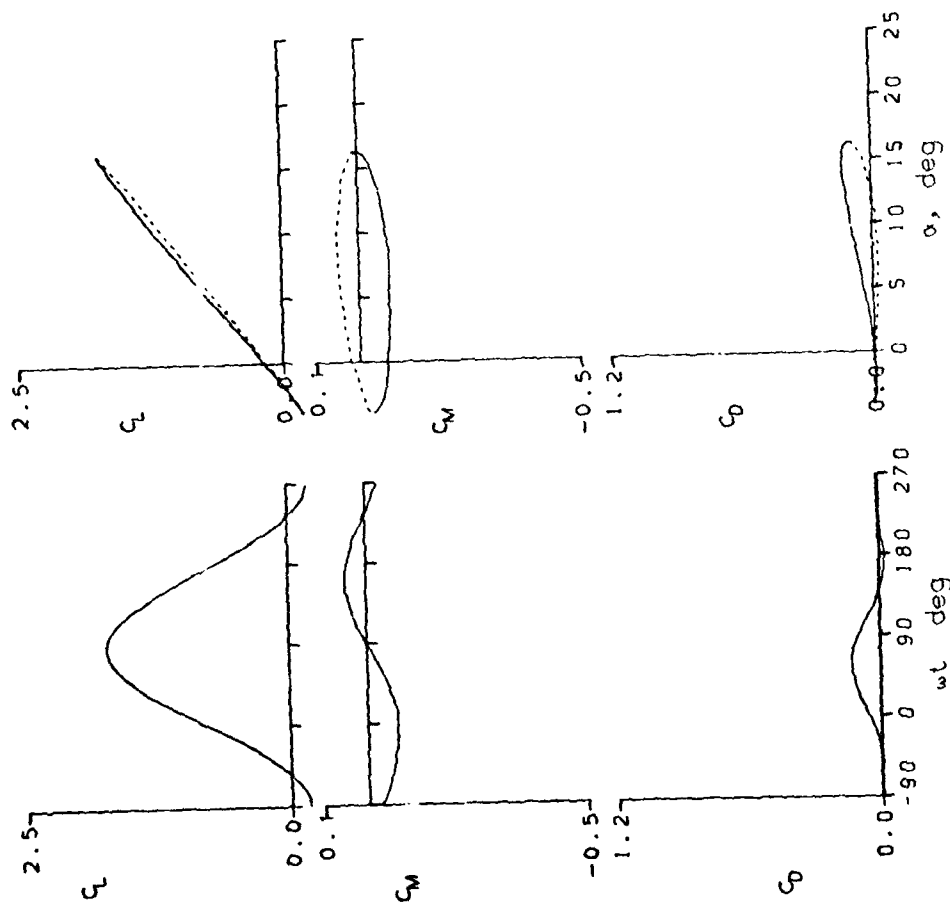


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33205	A0 = 14.80 °	h = 0.099
Re = 2.84 E6	A1 = 9.84 °	M = 0.219
CLmax = 2.44	CMmin = -0.48	CDmax = 0.99
α Lmax = 22.3 °	ξ = 0.353	Mmax = 1.100
α Cmin = 14.3 °	-CDmax = 15.4	α Mmax = 20.0 °

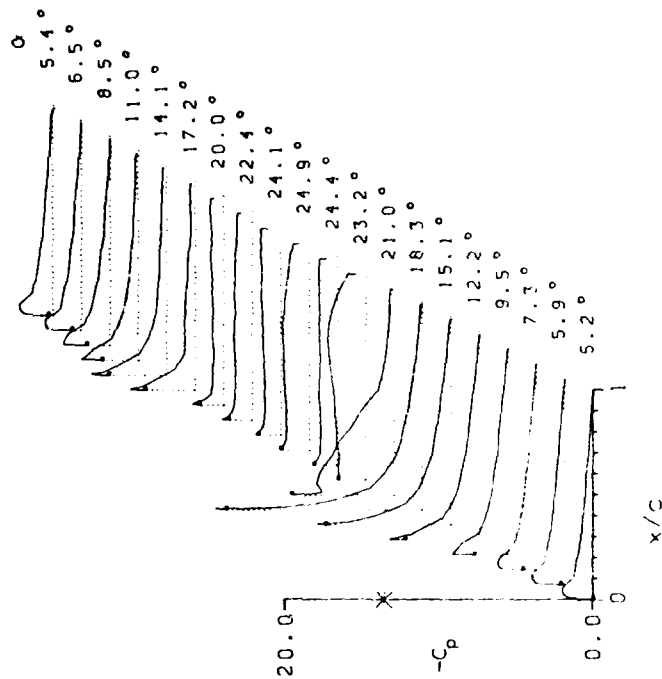
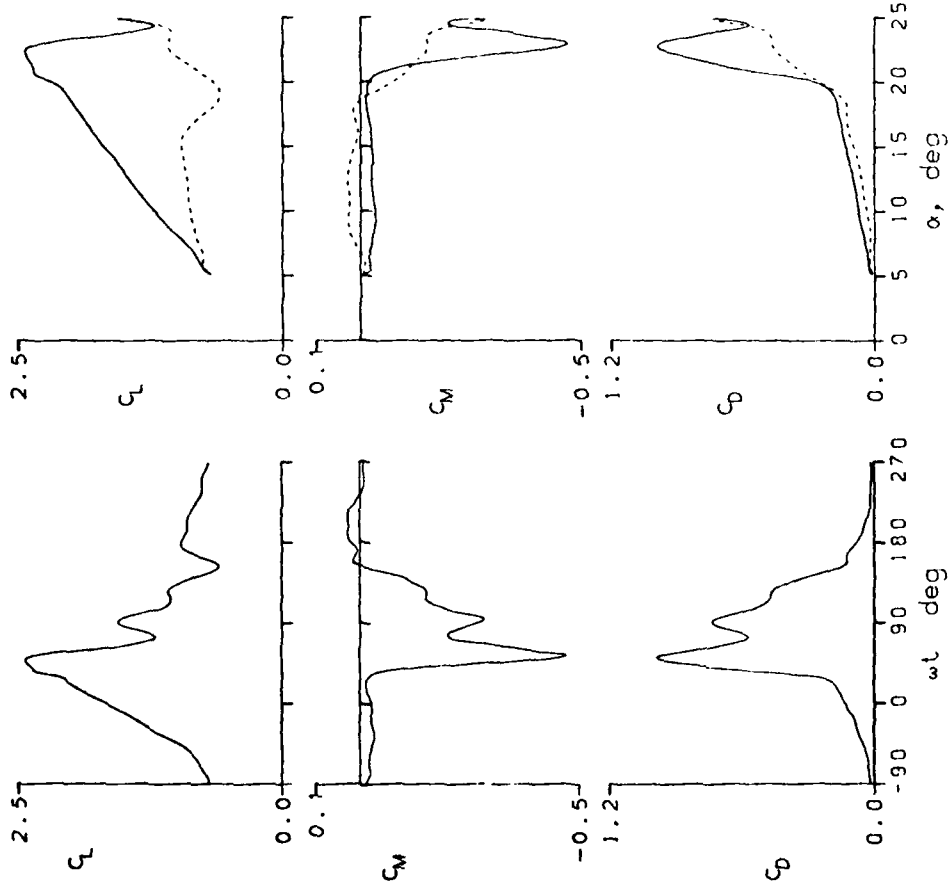


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33207 $A_0 = 14.83^\circ$ $k = 0.098$
 $Re = 3.19 \times 10^6$ $A_1 = 9.86^\circ$ $M = 0.249$
 $C_{Lmax} = 2.40$ $C_{Mmin} = -0.46$ $C_{Dmax} = 0.93$
 $\alpha_{Lmax} = 21.6^\circ$ $\xi = 0.470$ $M_{max} = 1.208$
 $\alpha_{C_{min}} = 14.4^\circ$ $-C_{Dmax} = 13.3$ $\alpha_{M_{max}} = 18.6^\circ$

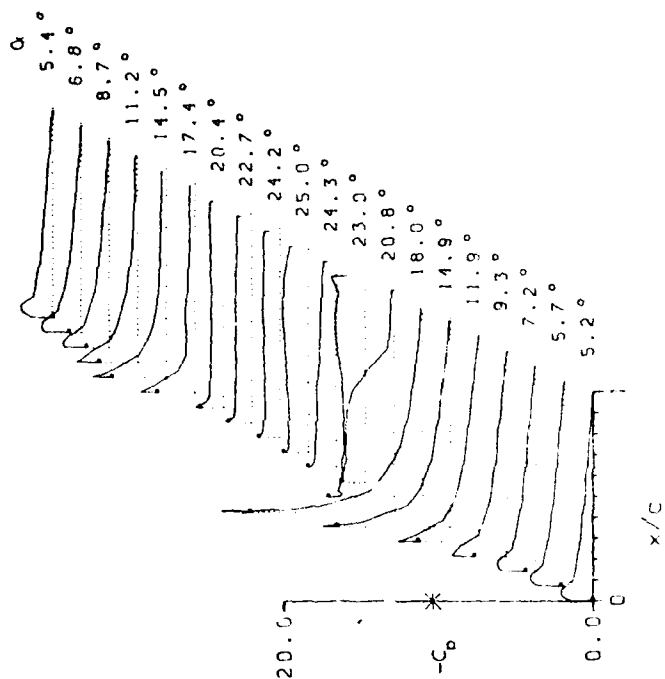
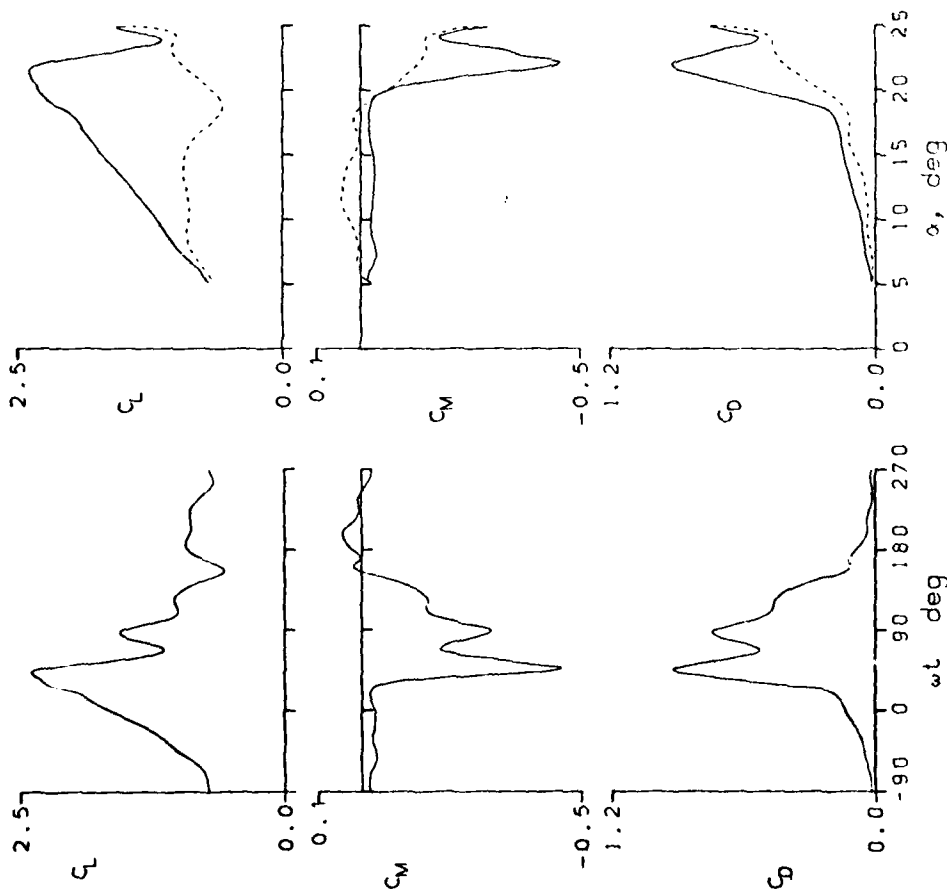


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 33215	A0 = 14.85°	k = 0.100
Re = 3.74 E6	A1 = 9.87°	M = 0.279
CLmax = 2.40	CMmin = -0.44	CDmax = 0.88
αLmax = 20.4°	ξ = 0.485	Mmax = 1.346
αCMmin = 14.5°	-CPmax = 11.8	αMmax = 17.8°

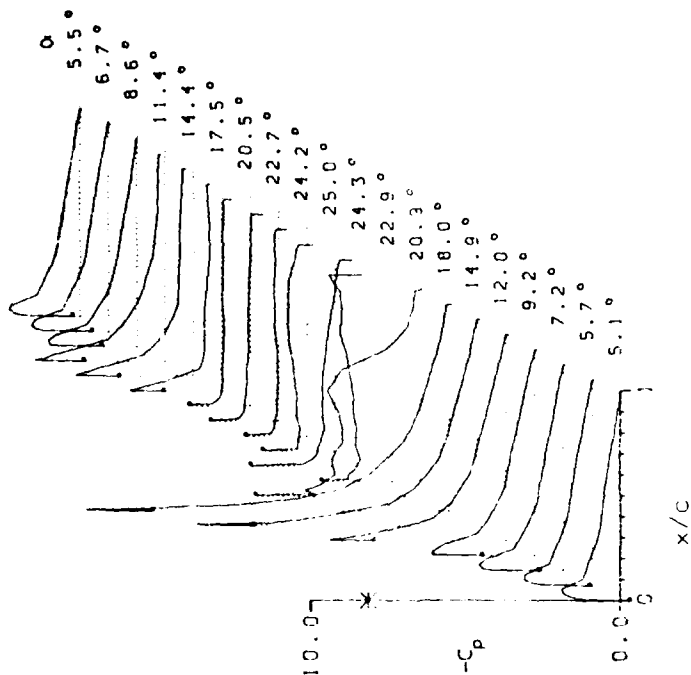
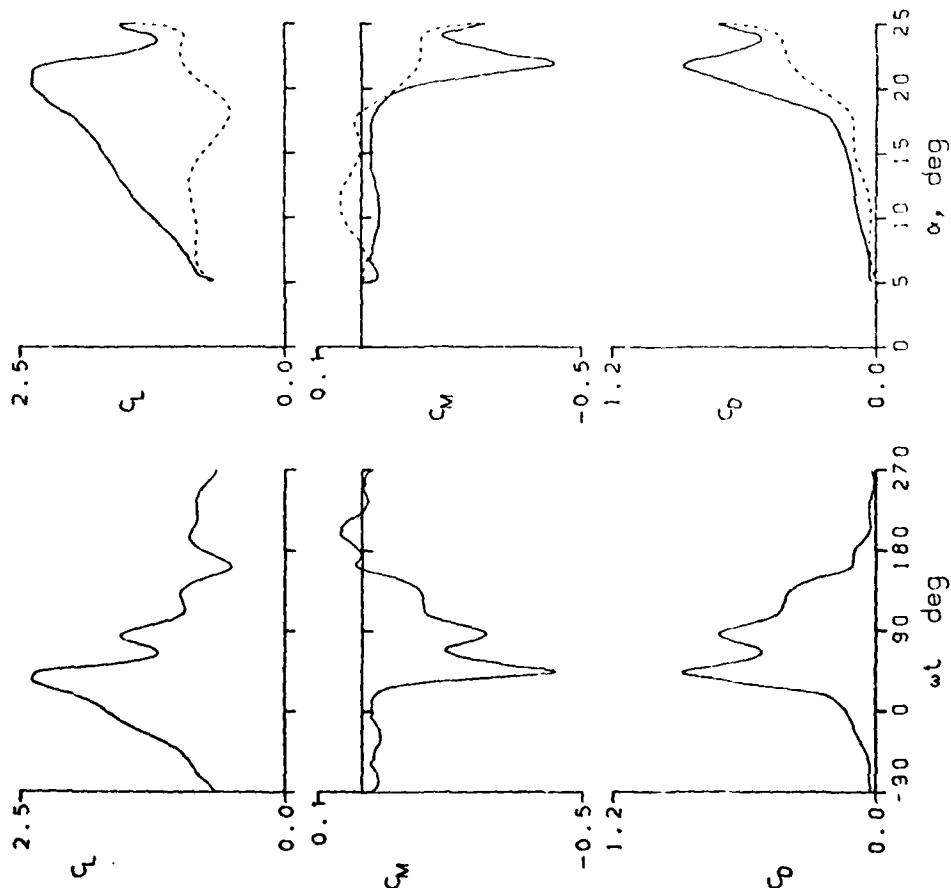


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 33217 ΔC = 14.87° μ = 0.025
 Re = 3.92 E6 A^* = 9.88° M = 0.297
 C_{Lmax} = 1.91 C_{Mmin} = -0.22 C_{Dmax} = 0.45
 α_{Lmax} = 16.3° ξ = 0.102 M_{max} = 1.354
 α_{Cmin} = 14.5° $-C_{Dmax}$ = 10.5 α_{Mmax} = 15.7°

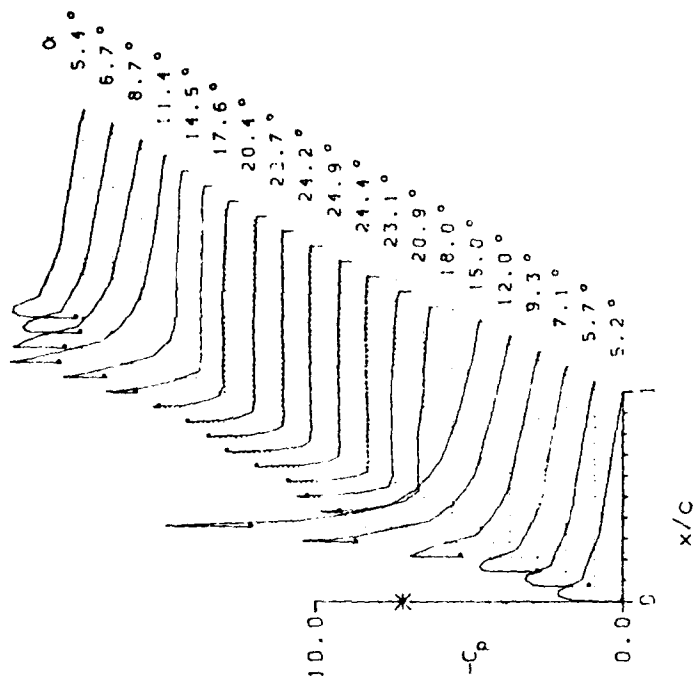
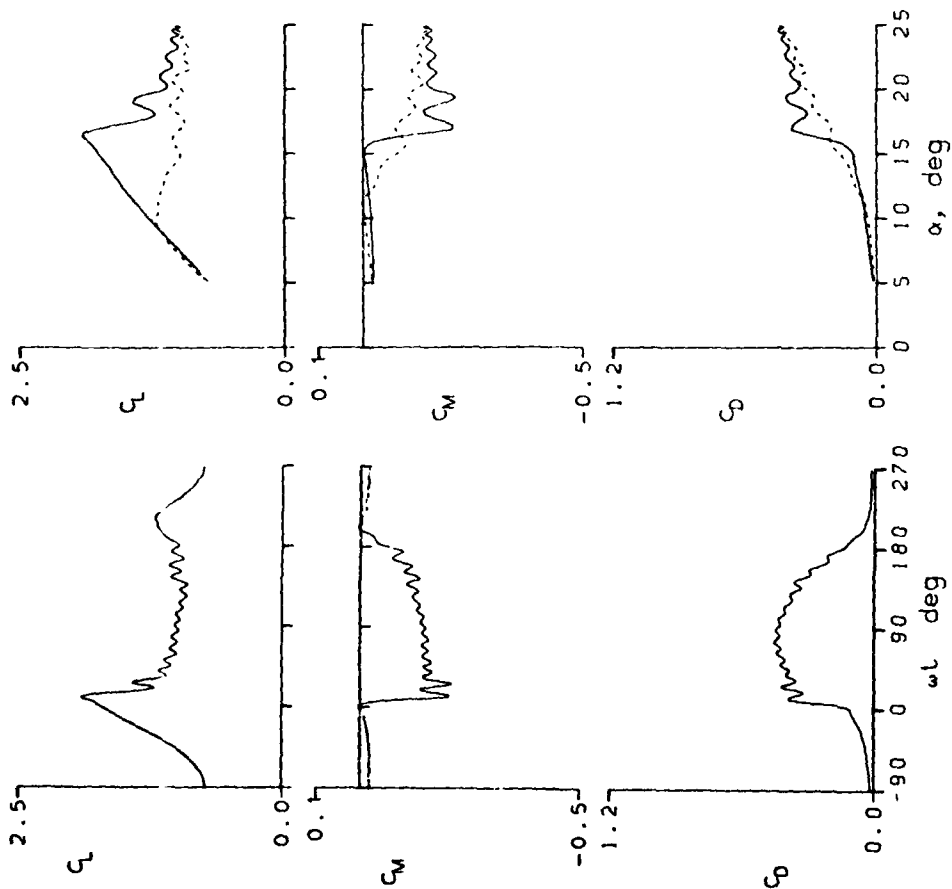


Figure 15.- Continued.

SIKORSKY SC-1045 AIRFOIL
 FRAME : 33222 $A_0 = 14.82^\circ$ $h = 0.049$
 $Re = 3.89 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.296$
 $C_{Lmax} = 2.10$ $C_{Mmin} = -0.29$ $C_{Dmax} = 0.53$
 $\alpha_{Lmax} = 18.1^\circ$ $\zeta = 0.216$ $M_{max} = 1.389$
 $\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 10.8$ $\alpha_{Mmax} = 16.2^\circ$

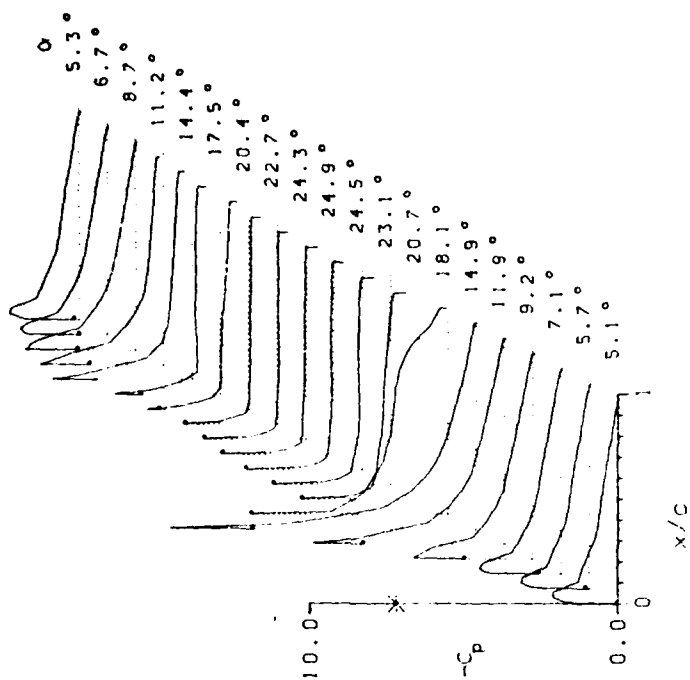
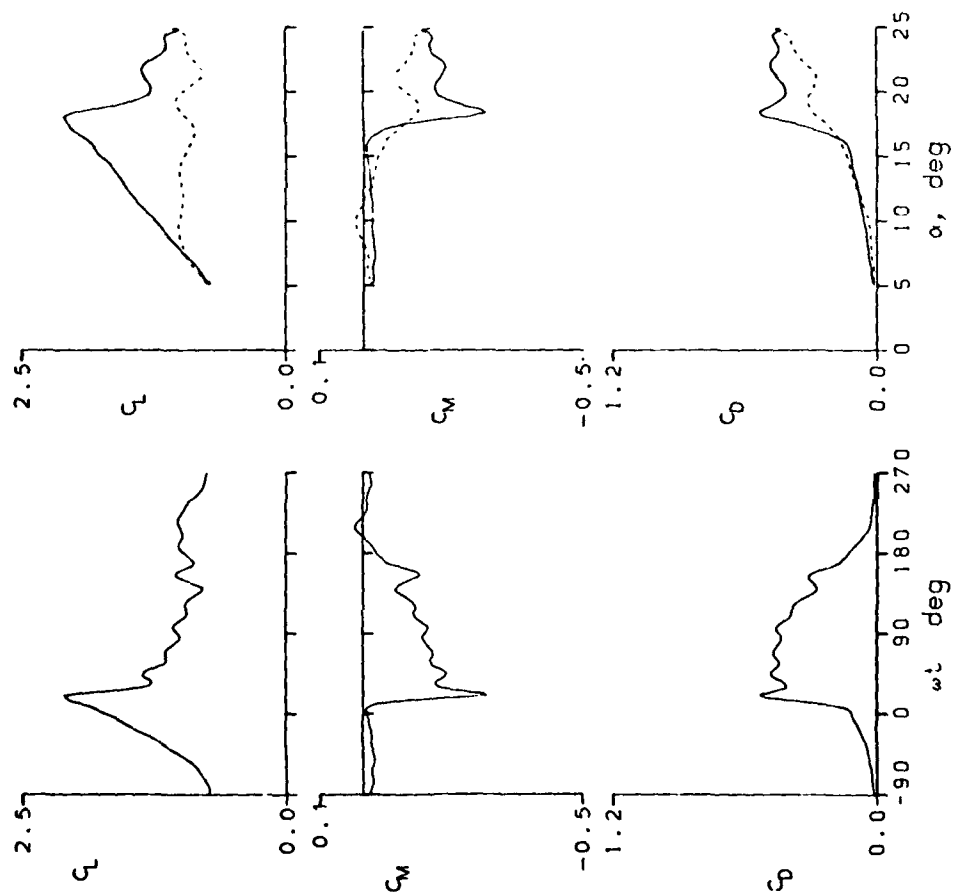


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 33300 $A_0 = 14.83^\circ$ $\mu = 0.100$
 $Re = 3.82 \text{ E}6$ $A_1 = 9.87^\circ$ $M = 0.292$
 $C_{Lmax} = 2.31$ $C_{Mmin} = -0.41$ $C_{Dmax} = 0.79$
 $\alpha_{Lmax} = 20.5^\circ$ $\zeta = 0.544$ $M_{max} = 1.391$
 $\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 11.1$ $\alpha_{Mmax} = 16.8^\circ$

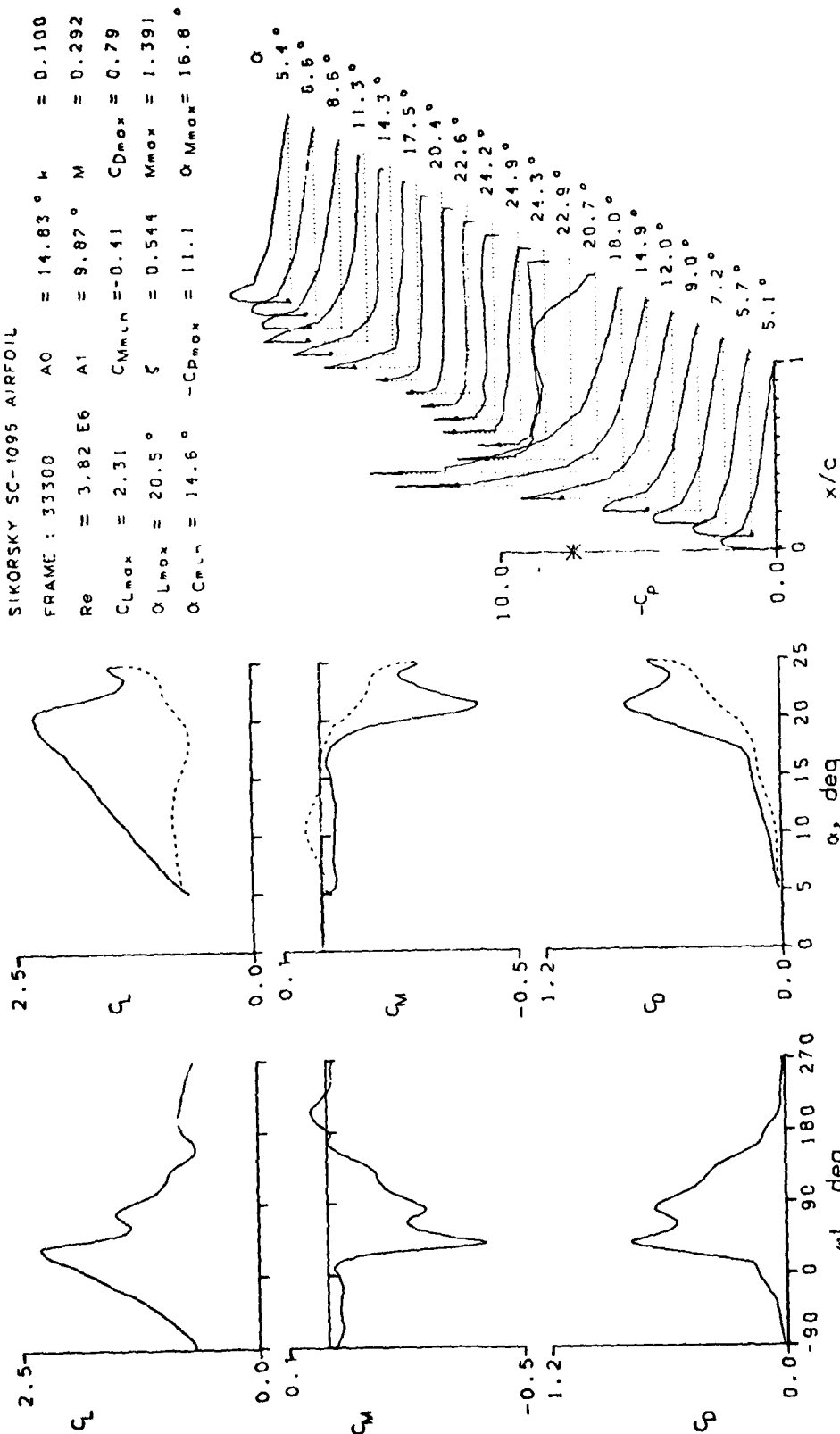


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL TRIP

FRAME : 34306 $A_0 = 14.81^\circ$ $k = 0.050$

$Re = 3.88 \text{ E} 6$ $A_1 = 9.91^\circ$ $M = 0.292$

$C_{Lmax} = 2.06$ $C_{Mmin} = -0.25$ $C_{Dmax} = 0.50$

$\alpha_{Lmax} = 17.2^\circ$ $\xi = 0.290$ $M_{max} = 1.256$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 15.6^\circ$

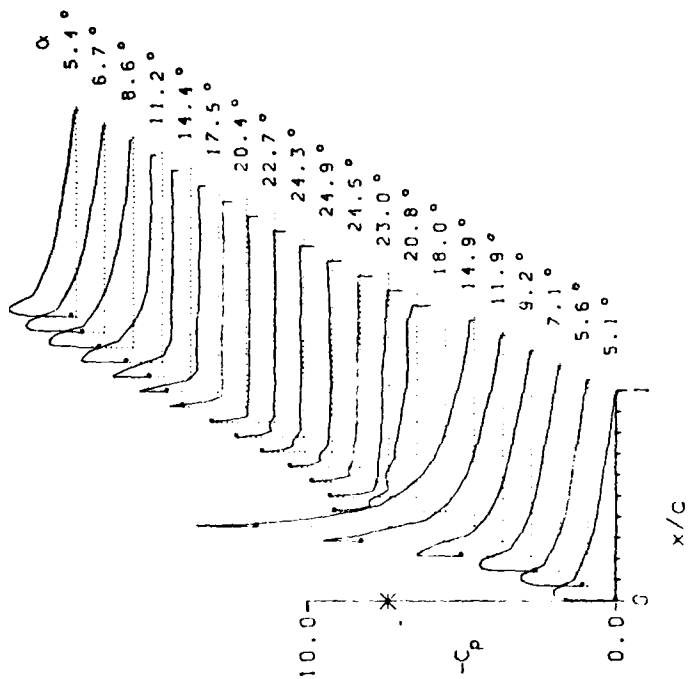
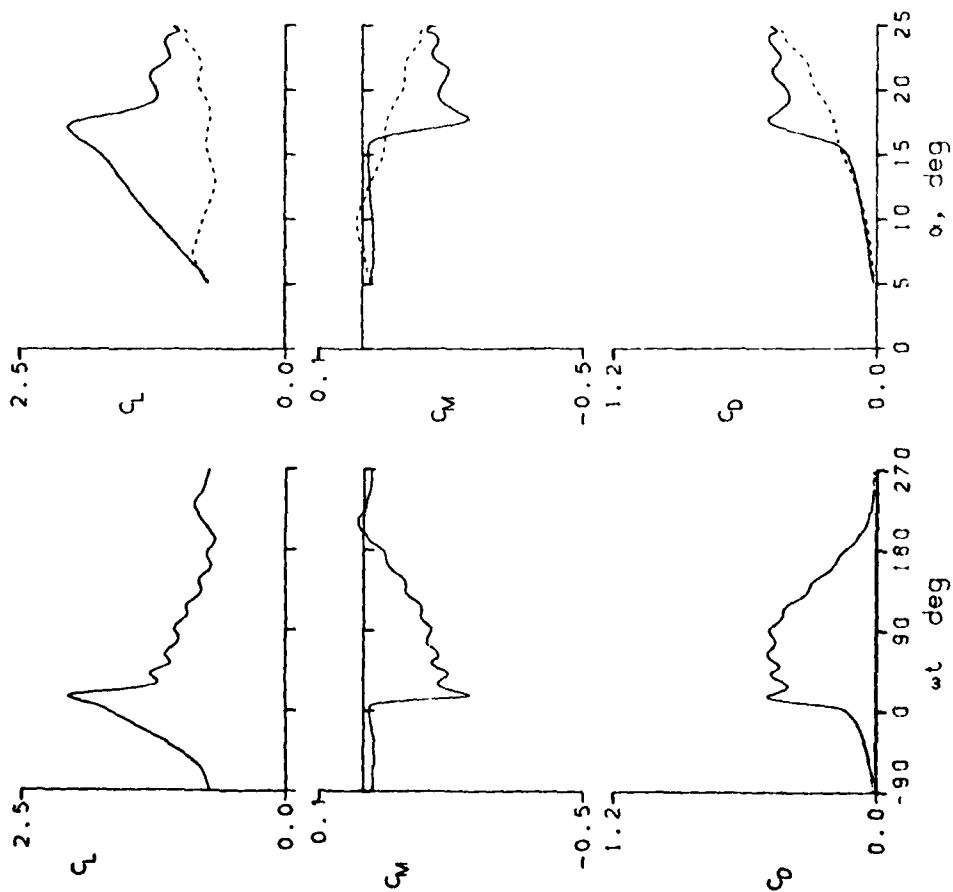


Figure 15.- Continued.

SIKORSKY SC-1095 : RFOIL

FRAME : 34308	A0 = 14.82°	k = 0.102	TRIP
Re = 3.80 E6	A1 = 9.89°	M = 0.288	
CLmax = 2.38	CMmin = -0.41	CDmax = 0.80	
Q Lmax = 25.7°	ξ = 0.526	Wav = 1.329	
Q CMmin = 14.4°	-CDmax = 10.9	Q Mmax = 17.2°	

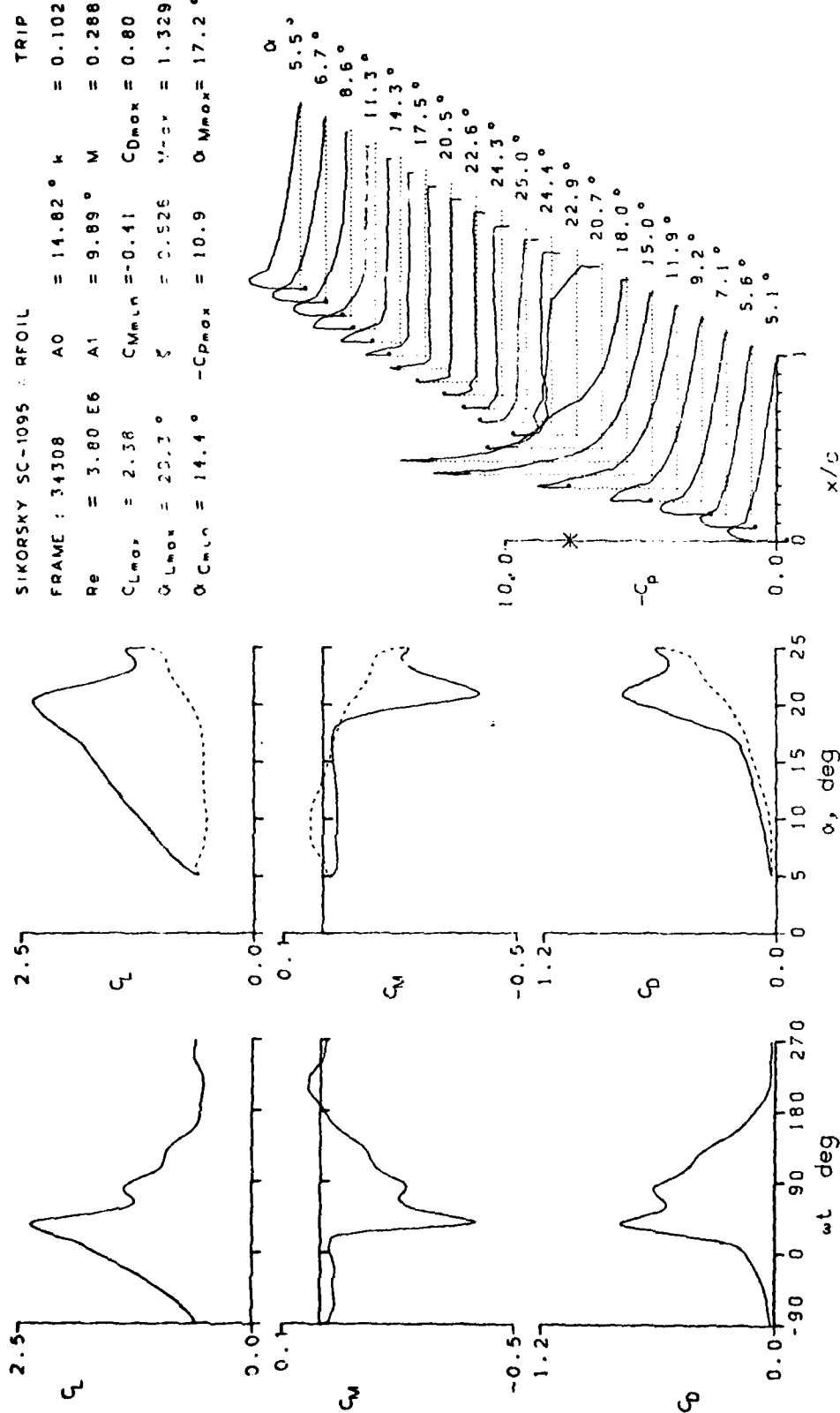


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 34318	A0 = 14.81°	k = 0.050	TRIP
Re = 2.48 E6	A1 = 9.91°	M = 0.184	
CLmax = 2.15	CMmin = -0.32	CDmax = 0.64	
αLmax = 18.9°	ξ = 0.255	Mmax = 0.702	
αCMmin = 14.4°	-CPmax = 11.2	αMmax = 17.2°	

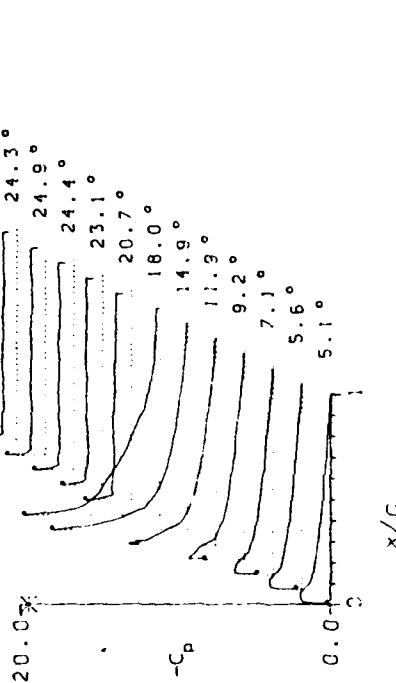
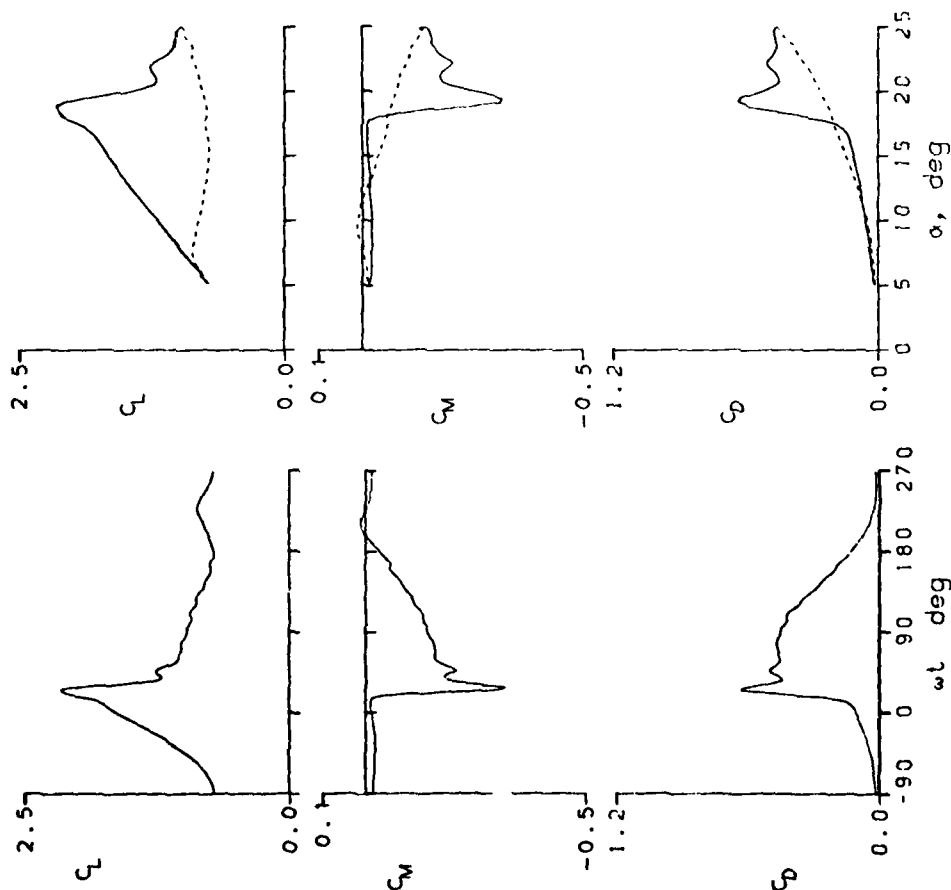


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL TRIP
 FRAME : 34321 A0 = 14.79° h = 0.100
 Re = 2.48 E6 A1 = 9.93° M = 0.184
 CLmax = 2.44 CMmin = -0.45 CDmax = 0.91
 αLmax = 21.3° ζ = 0.387 Mmax = 0.754
 αCMmin = 14.4° -CDmax = 12.6 αMmax = 18.5°

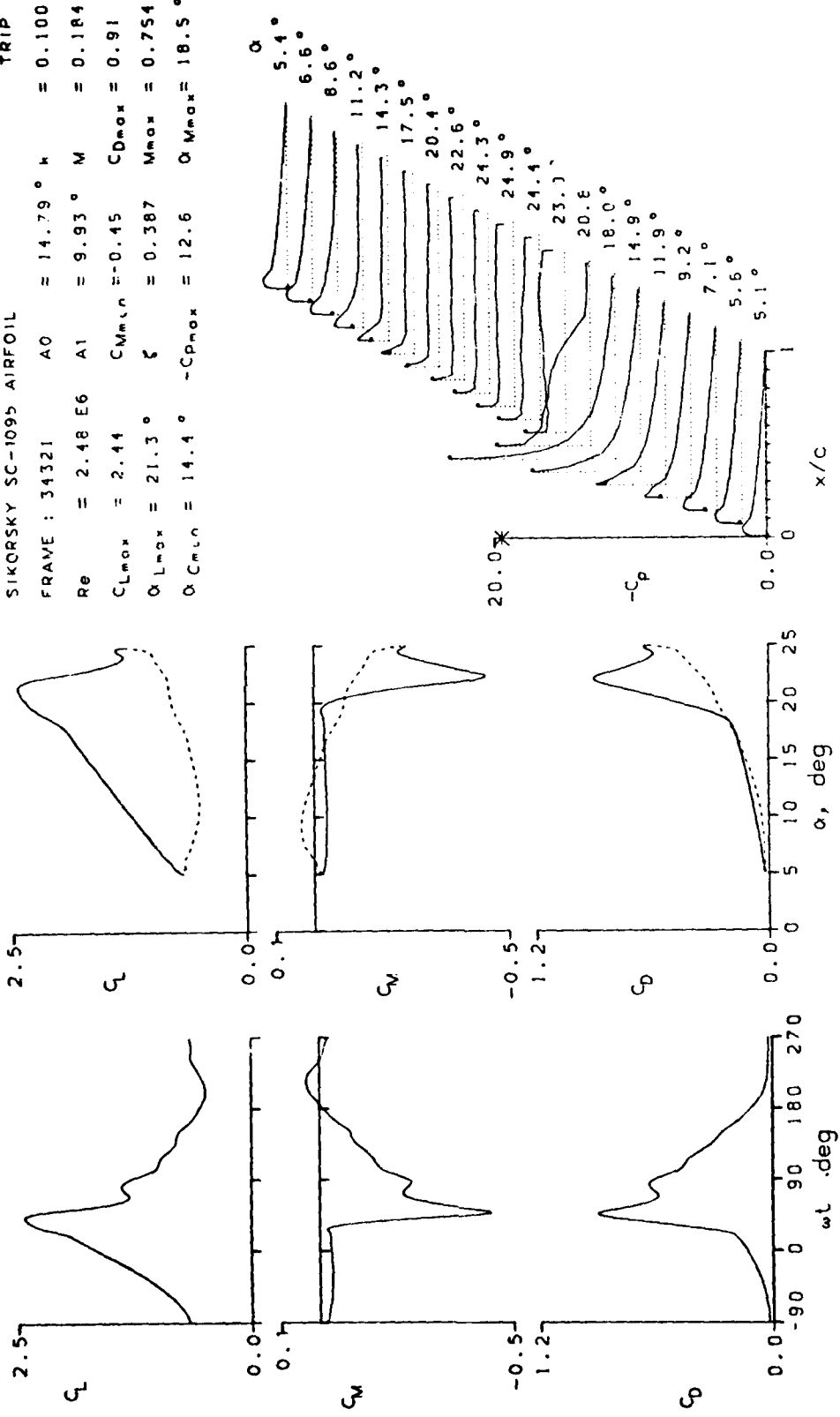


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 34323	$\Delta D = 14.81^\circ$	$k = 0.150$	TRIP
$Re = 2.47 \text{ E} 6$	$A1 = 9.90^\circ$	$M = 0.184$	
$CL_{max} = 2.58$	$CM_{min} = -0.51$	$CD_{max} = 1.08$	
$\alpha_{L_{max}} = 23.1^\circ$	$\xi = 0.208$	$M_{max} = 0.784$	
$\alpha_{C_{min}} = 14.4^\circ$	$-CD_{max} = 13.4$	$\alpha_{M_{max}} = 19.7^\circ$	

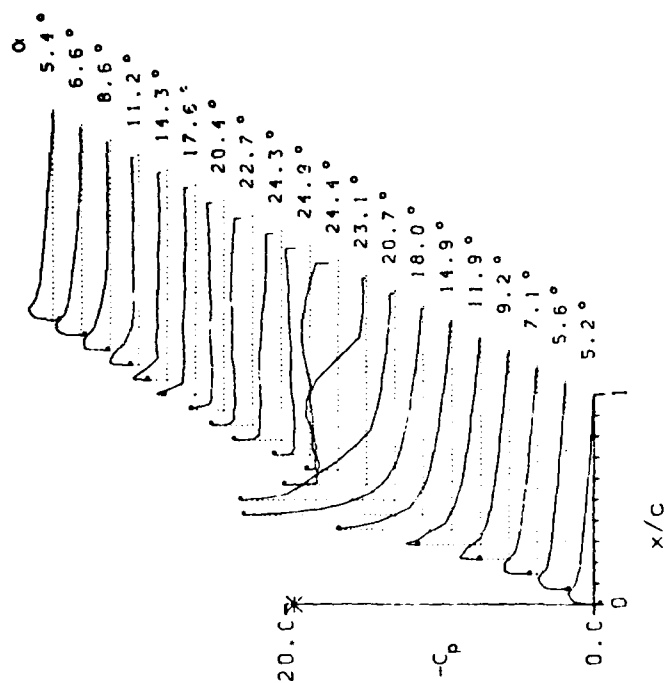
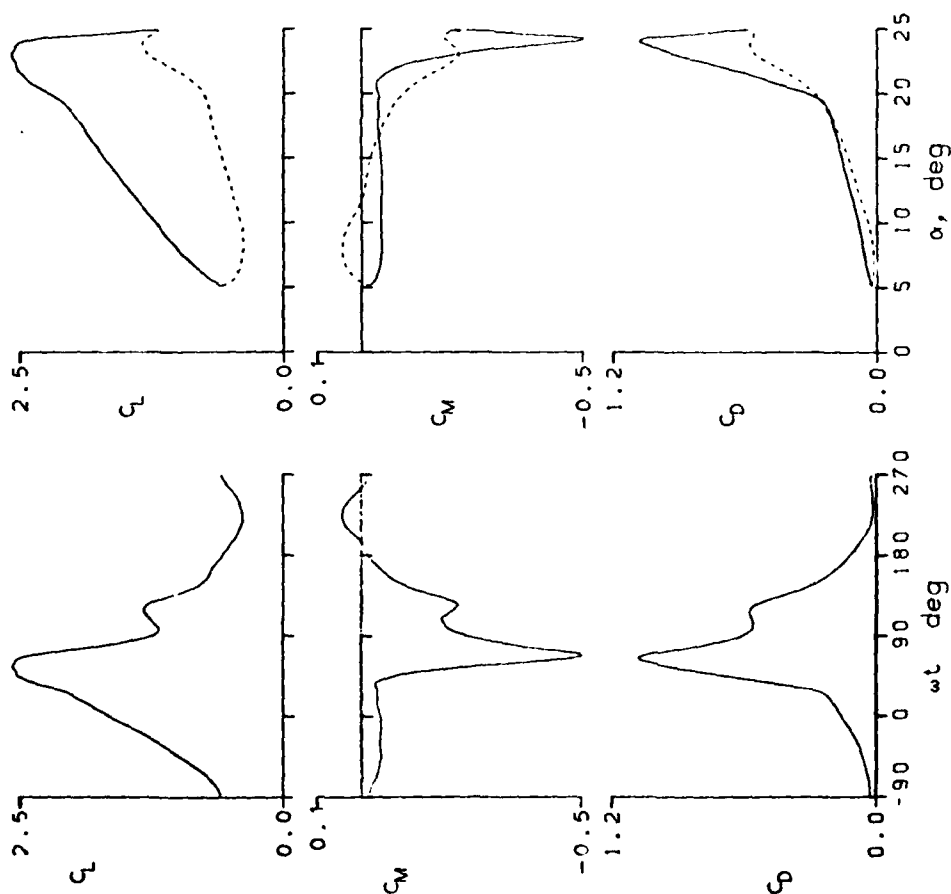


Figure 15.- Continued.

SIXORSKY SC-1095 AIRFOIL
 FRAME : 34409 $A_0 = 14.91^\circ$ $k = 0.156$
 $Re = 3.60 \times 10^6$ $A_1 = 9.87^\circ$ $M = 0.279$
 $C_{L_{max}} = 2.45$ $C_{M_{min}} = -0.47$ $C_{D_{max}} = 0.96$
 $\alpha_{L_{max}} = 21.4^\circ$ $\xi = 0.452$ $M_{max} = 1.287$
 $\alpha_{C_{min}} = 14.6^\circ$ $-C_{D_{max}} = 11.2$ $\alpha_{M_{max}} = 18.4^\circ$

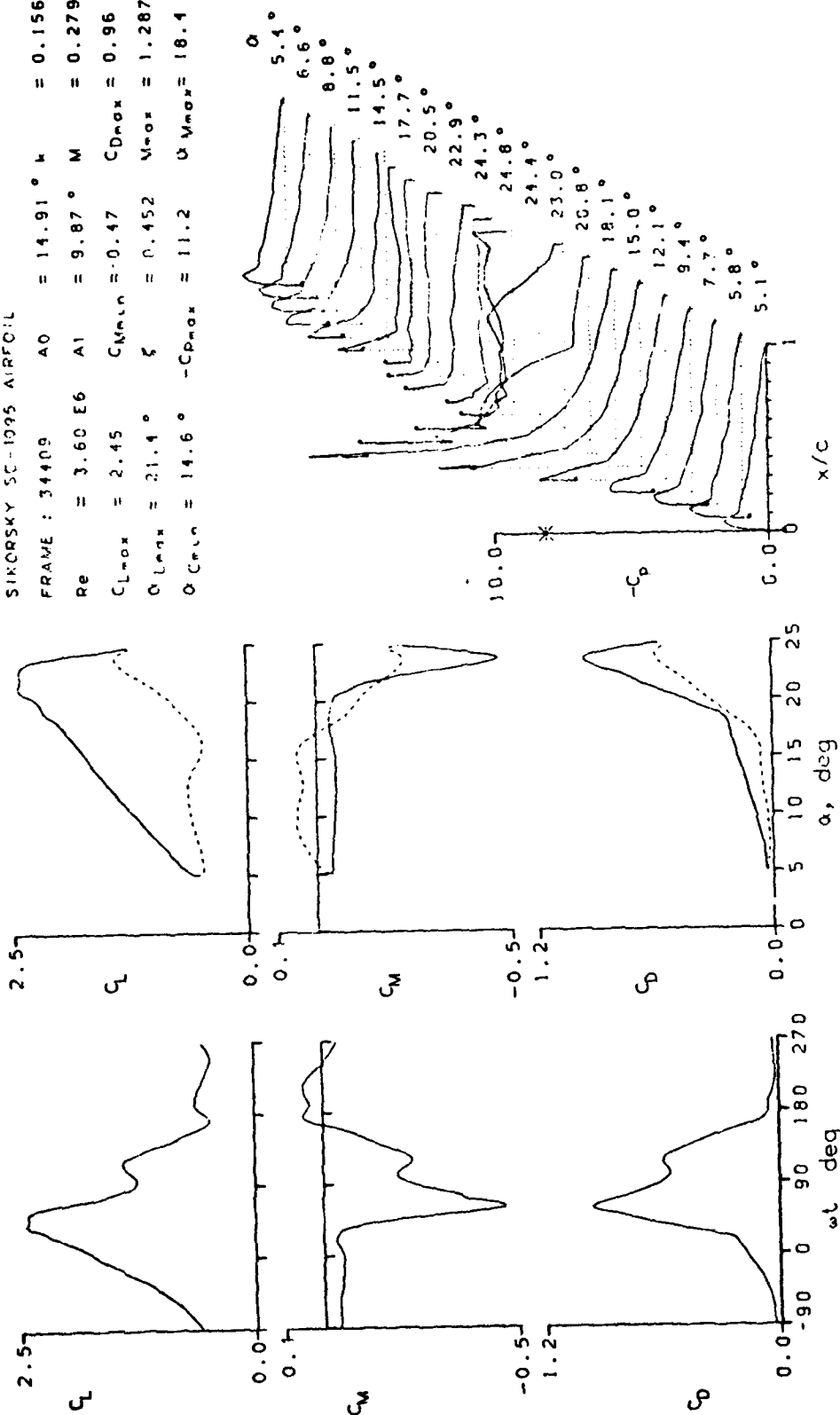


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 34418 $A_0 = 4.25^\circ$ $k = 0.098$
 $Re = 3.86 \text{ E}6$ $A_1 = 10.11^\circ$ $M = 0.302$
 $C_{L_{max}} = 1.69$ $C_{M_{min}} = -0.07$ $C_{D_{max}} = 0.13$
 $\alpha_{L_{max}} = 14.5^\circ$ $\xi = 0.246$ $M_{max} = 1.296$
 $\alpha_{C_{min}} = 3.6^\circ$ $-C_{D_{max}} = 9.7$ $\alpha_{M_{max}} = 14.5^\circ$

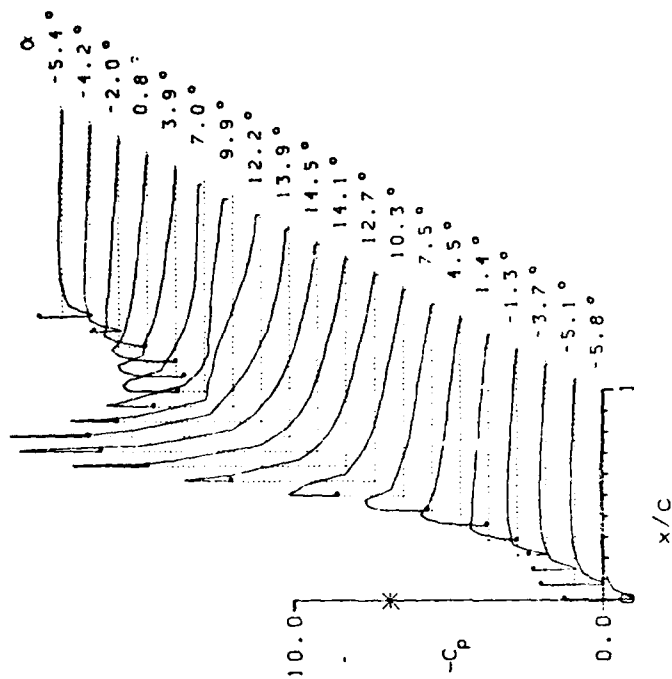
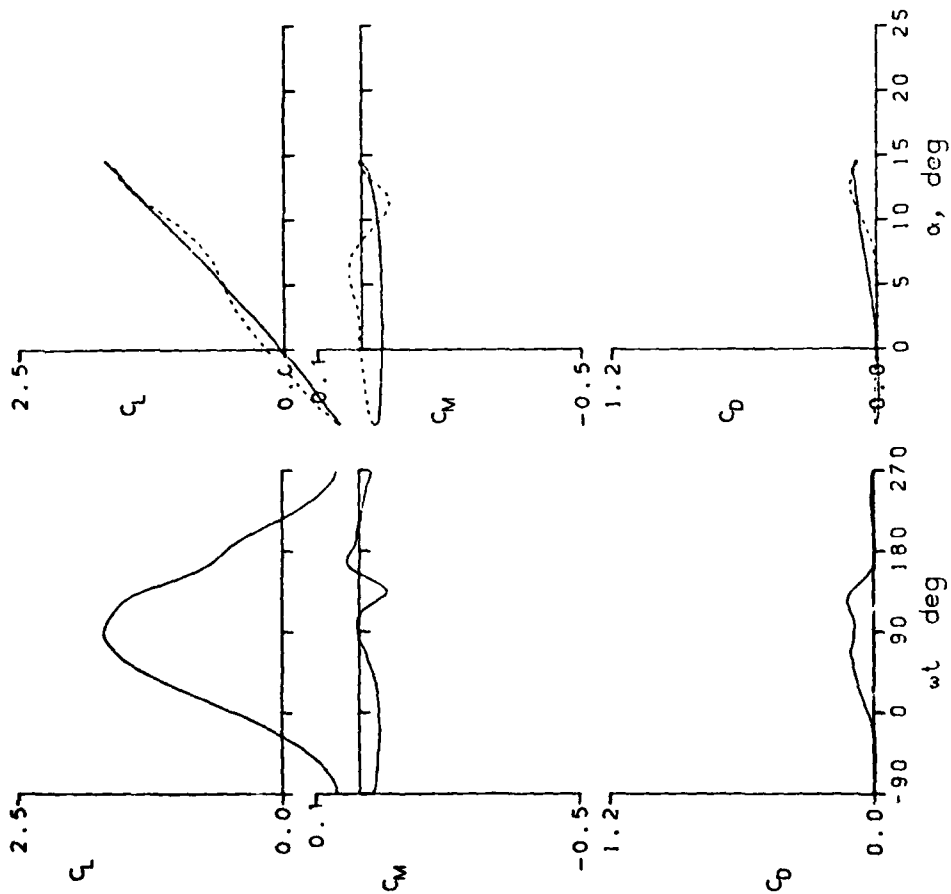


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37023 $A_0 = 9.73^\circ$ $k = 0.025$
 $Re = 3.94 \text{ E}6$ $A' = 9.95^\circ$ $M = 0.300$
 $C_{Lmax} = 1.83$ $C_{Mmin} = -0.21$ $C_{Dmax} = 0.35$
 $\alpha_{Lmax} = 15.6^\circ$ $\xi = 0.041$ $M_{max} = 1.309$
 $\alpha_{Cmin} = 9.2^\circ$ $-C_{Pmax} = 9.9$ $\alpha_{Mmax} = 15.0^\circ$

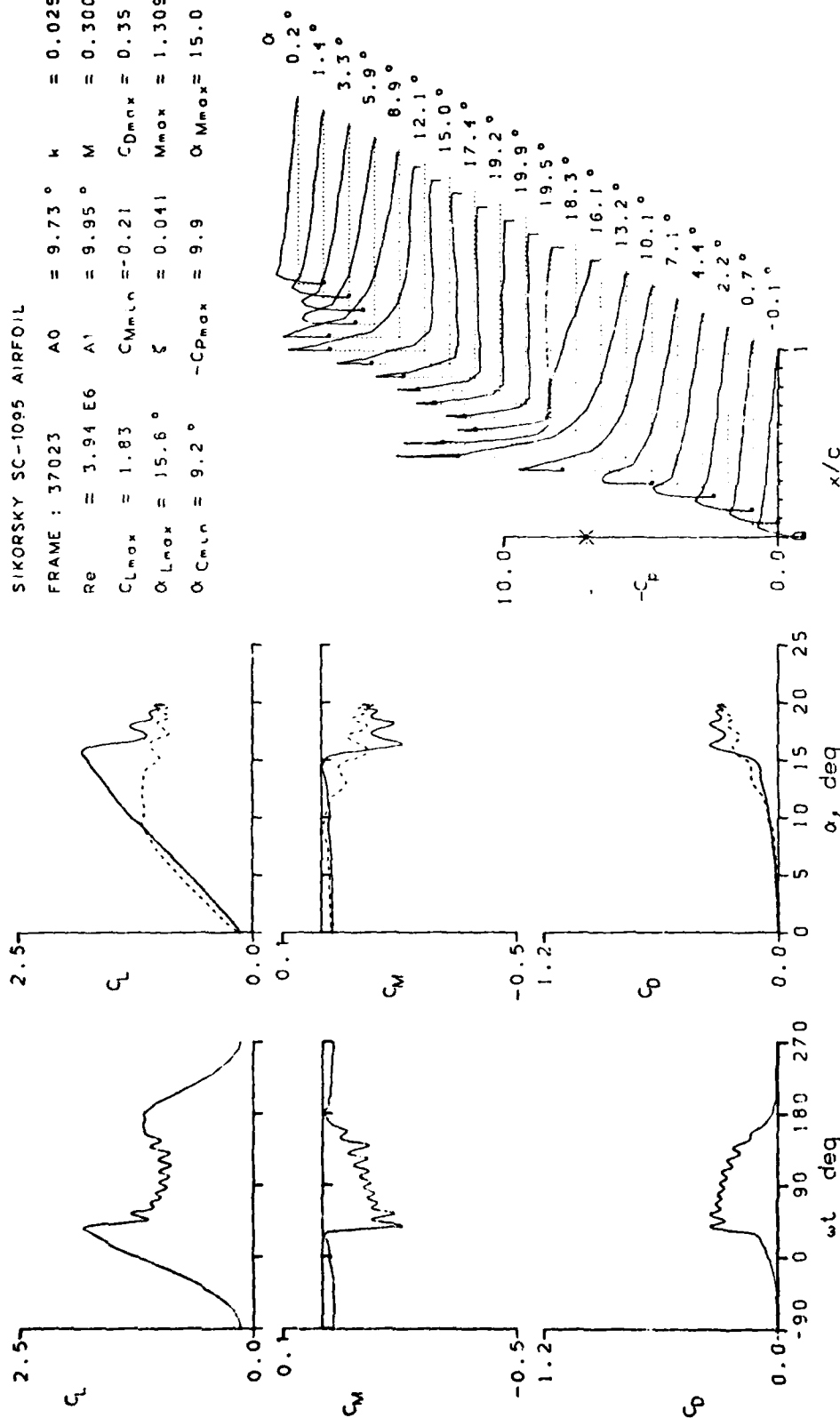


Figure 15.- Continued.

SIKORSKY SC-109S AIRFOIL

FRAME : 37101	A0 = 9.77°	k = 0.050
Re = 3.93 E6	A1 = 9.93°	M = 0.301
CLmax = 2.04	CMmin = -0.28	CDmax = 0.47
OLmax = 17.1°	ζ = 0.121	Mmax = 1.369
OLmin = 9.3°	-CDmax = 10.3	OLmax = 15.8°

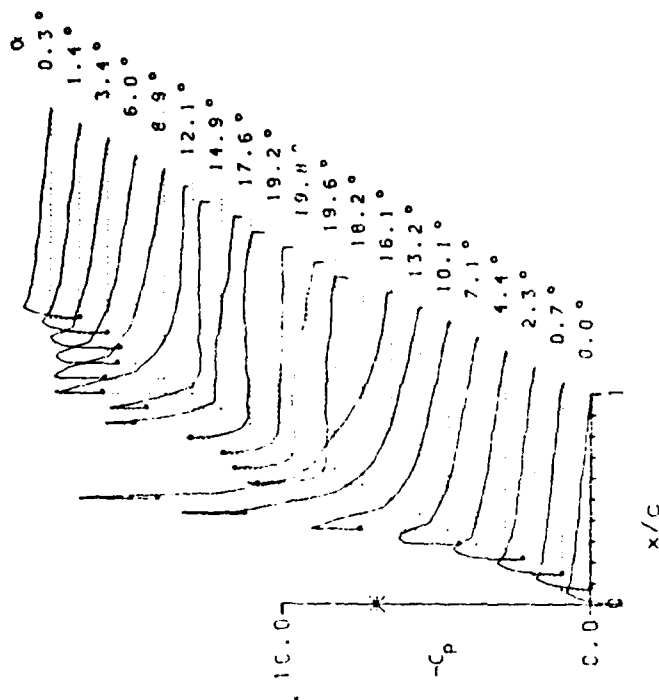
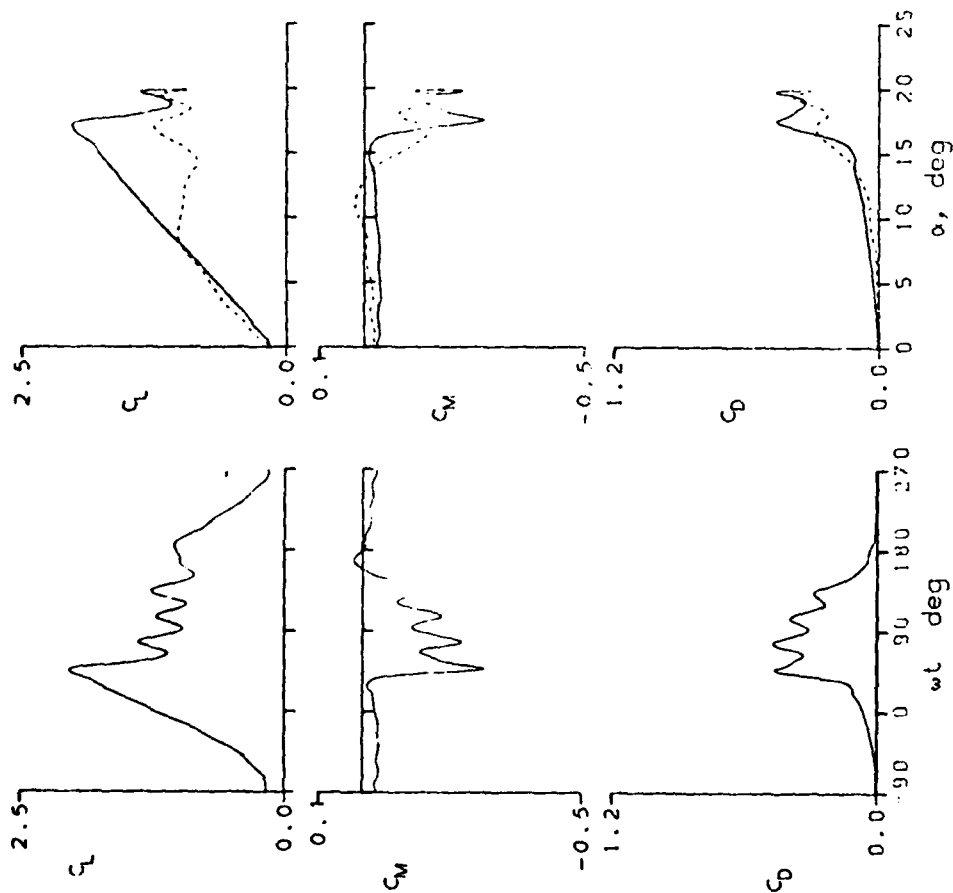


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37107 $A_0 = 9.78^\circ$ $\mu = 0.099$
 $R_0 = 3.92 \text{ E6}$ $A_1 = 9.90^\circ$ $M = 0.102$
 $C_{L_{\max}} = 2.18$ $C_{M_{\min}} = -0.36$ $C_{D_{\max}} = 0.64$
 $\alpha_{L_{\max}} = 18.7^\circ$ $\xi = 0.275$ $M_{\max} = 1.412$
 $\alpha_{C_{M_{\min}}} = 9.3^\circ$ $-C_{D_{\max}} = 10.5$ $\alpha_{M_{\max}} = 16.4^\circ$

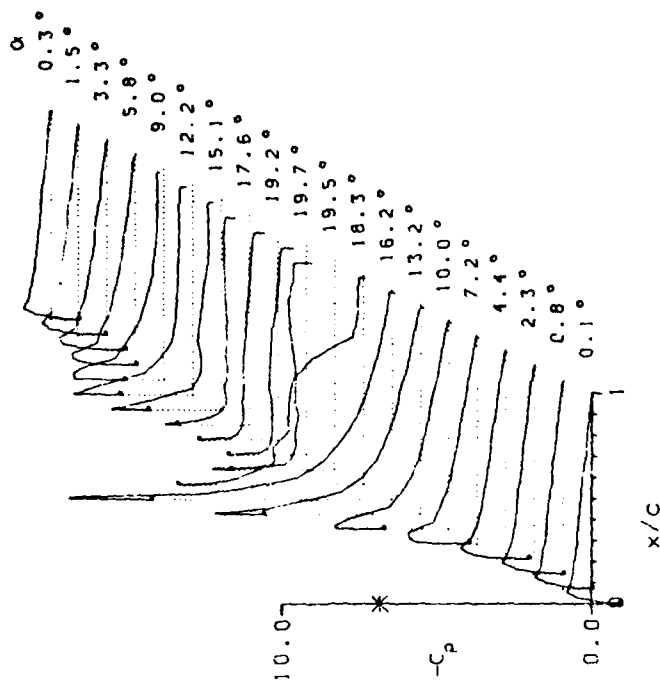
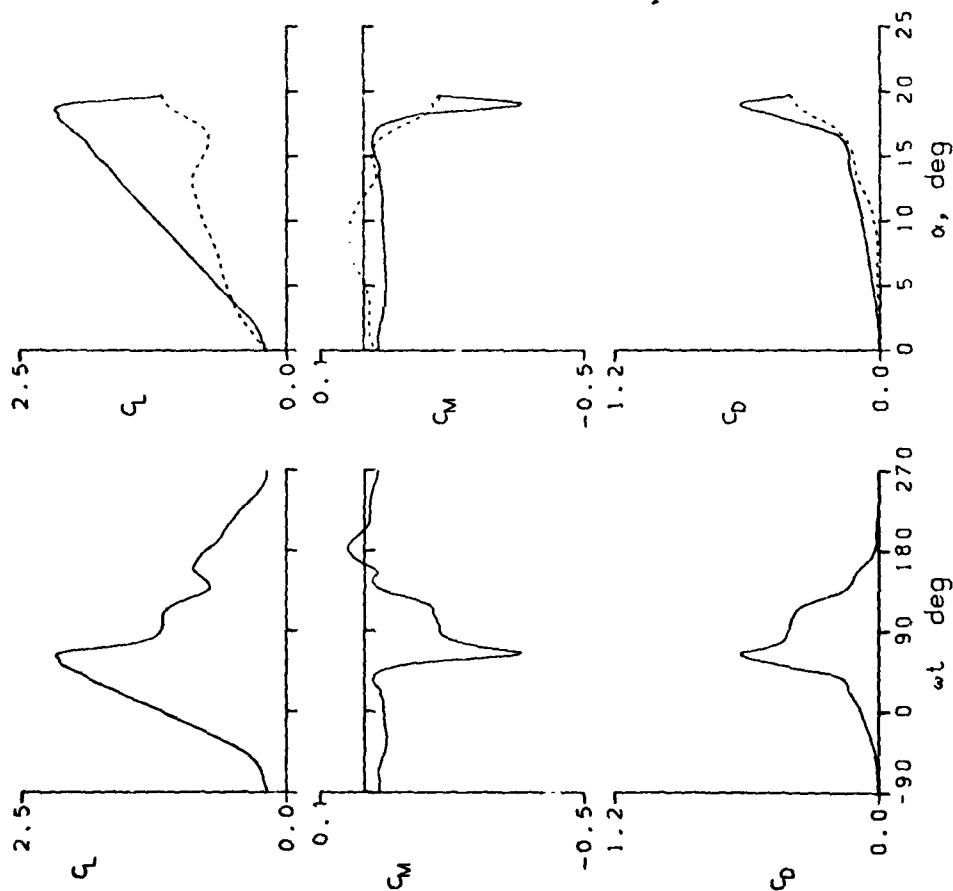


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37109 A0 = 9.92° μ = 0.148
 Re = 3.89 E6 A1 = 9.90° M = 0.302
 C_{Lmax} = 2.23 C_{Mmin} = -0.40 C_{Dmax} = 0.71
 α_{Lmax} = 19.6° ξ = 0.238 M_{max} = 1.427
 α_{Cmin} = 9.4° $-C_{Dmax}$ = 10.6 α_{Mmax} = 17.2°

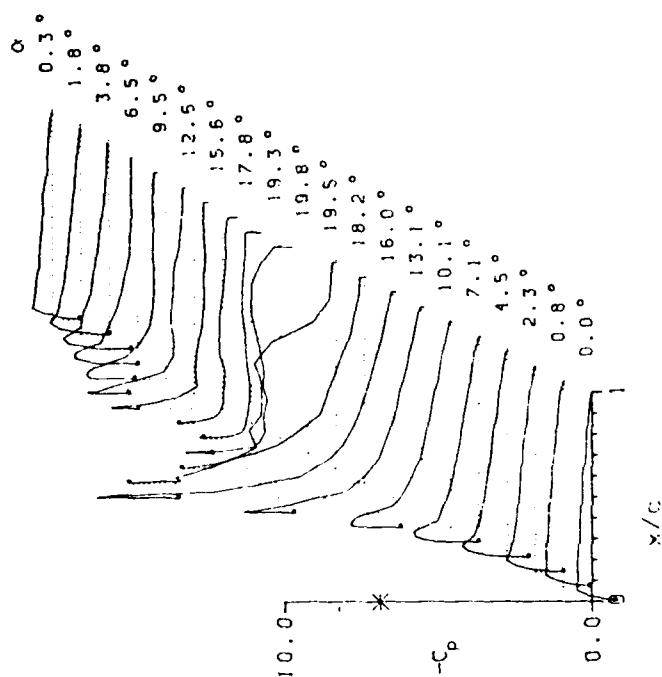
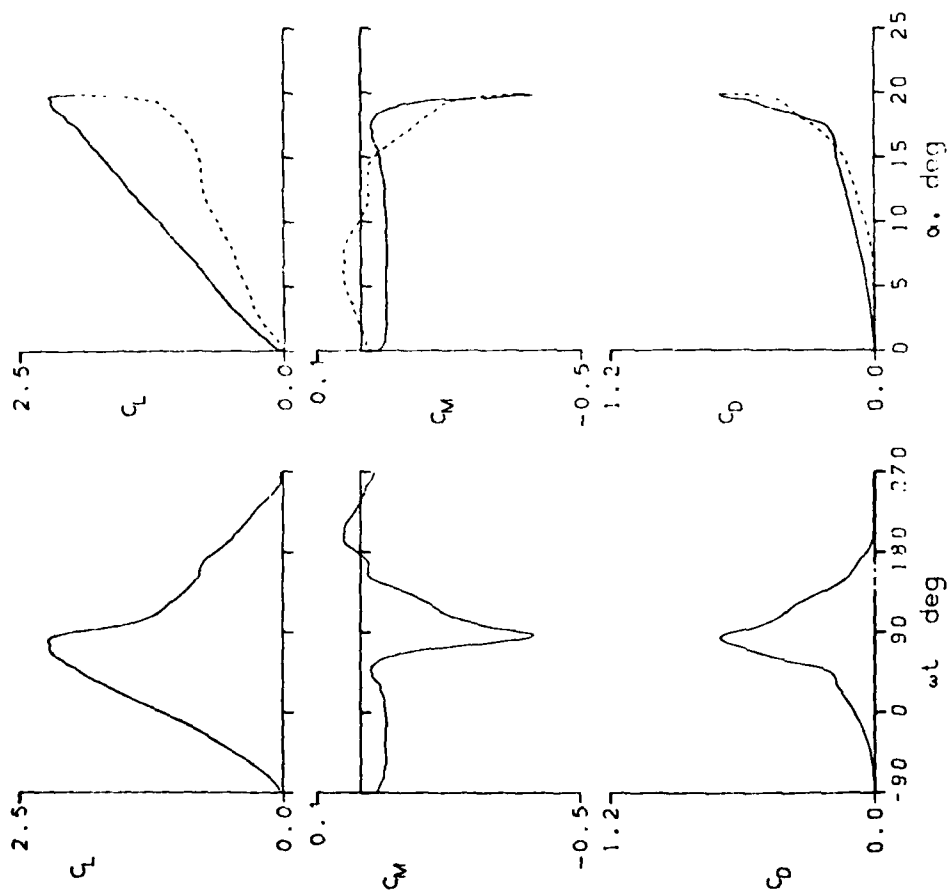


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37119 $A_0 = 3.90^\circ$ $k = 0.049$
 $Re = 3.87 \text{ E}6$ $A_1 = 10.13^\circ$ $M = 0.302$
 $C_{Lmax} = 1.65$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.14$
 $\alpha_{Lmax} = 14.1^\circ$ $\xi = 0.104$ $M_{max} = 1.276$
 $\alpha_{Cmin} = 3.4^\circ$ $-C_{Pmax} = 9.5$ $\alpha_{Mmax} = 14.2^\circ$

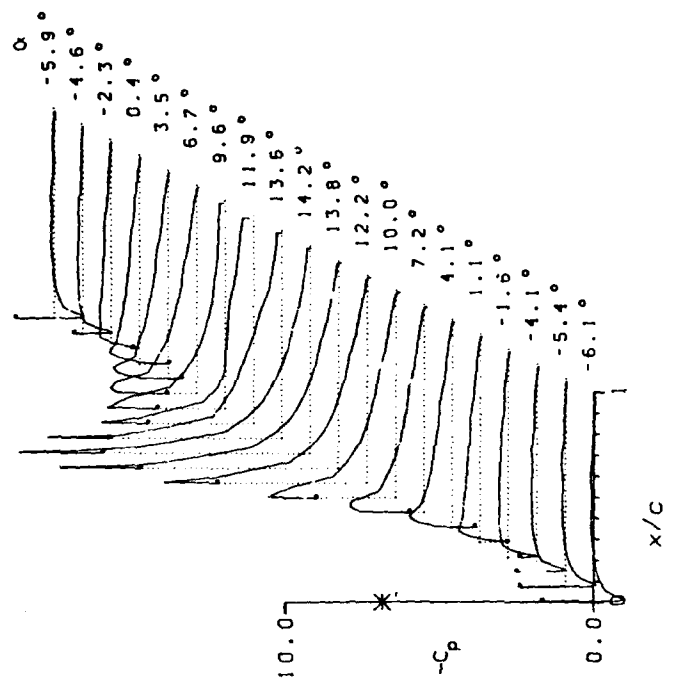
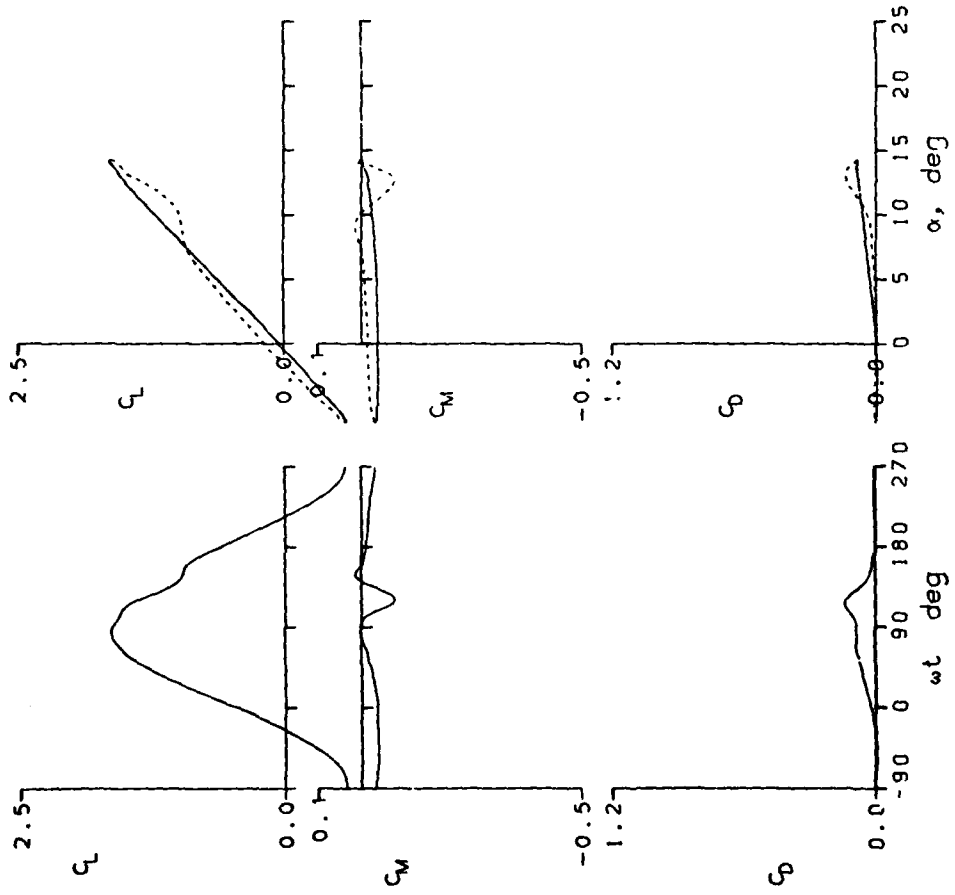


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37121 $A_0 = 3.93^\circ$ $k = 0.098$
 $R_9 = 3.86 \text{ E6}$ $A_1 = 10.11^\circ$ $M = 0.303$
 $C_{L_{max}} = 1.68$ $C_{y_{min}} = -0.06$ $C_{D_{max}} = 0.11$
 $\alpha_{L_{max}} = 14.2^\circ$ $\xi = 0.313$ $M_{max} = 1.304$
 $\alpha_{C_{min}} = 3.3^\circ$ $-C_{P_{max}} = 9.6$ $\alpha_{M_{max}} = 14.2^\circ$

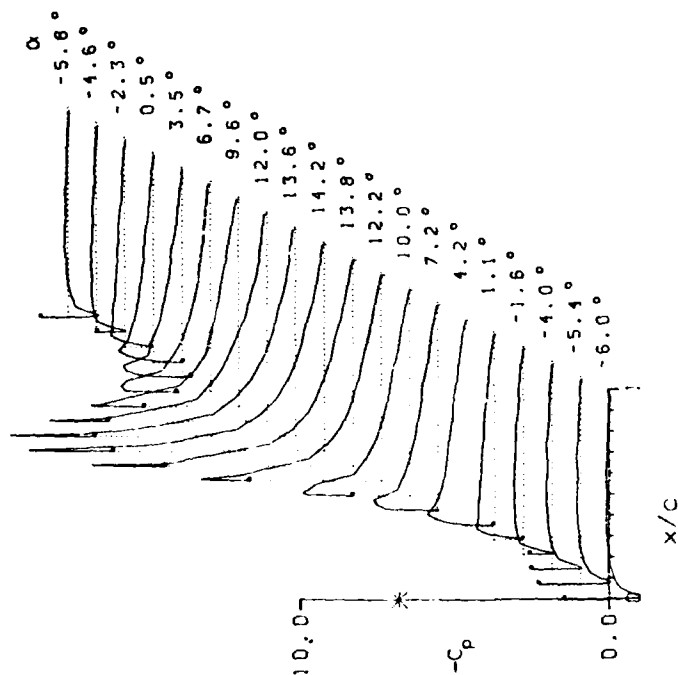
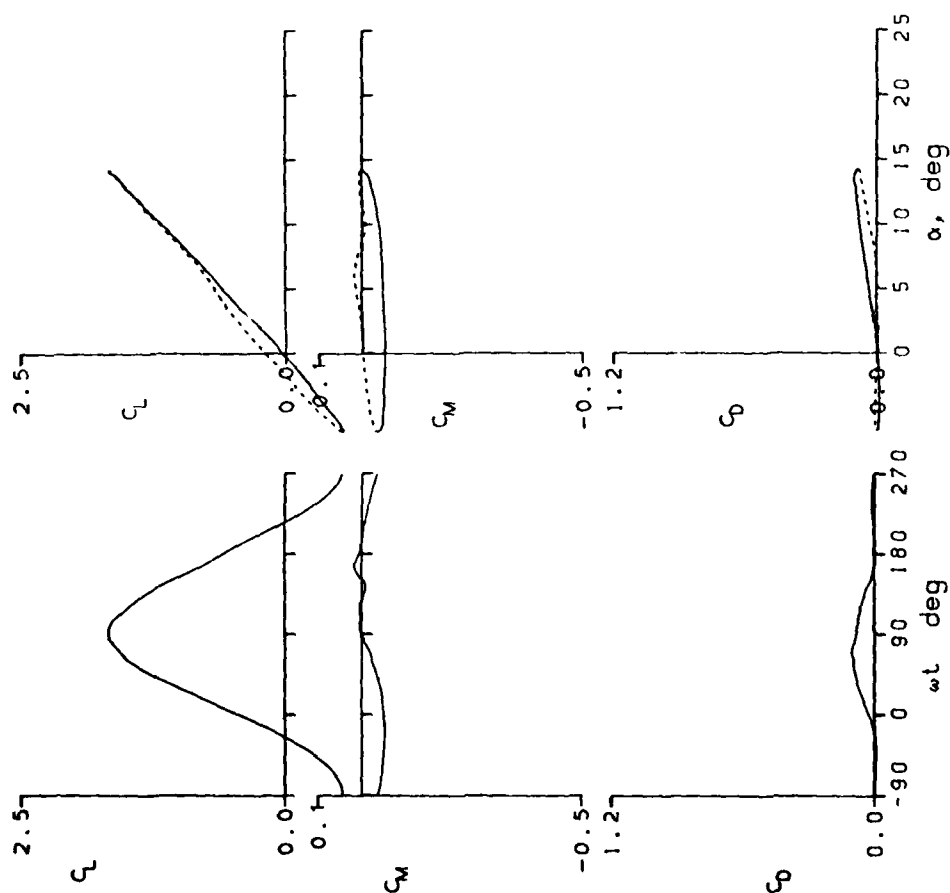


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37123 $A_0 = 3.88^\circ$ $h = 0.147$
 $Re = 3.84 \text{ E}6$ $A_1 = 10.11^\circ$ $M = 0.302$
 $C_{Lmax} = 1.70$ $C_{Mmin} = -0.07$ $C_{Dmax} = 0.12$
 $\alpha_{Lmax} = 14.1^\circ$ $\xi = 0.508$ $M_{max} = 1.327$
 $\alpha_{Cmin} = 3.4^\circ$ $-C_{Dmax} = 9.9$ $\alpha_{Mmax} = 13.8^\circ$

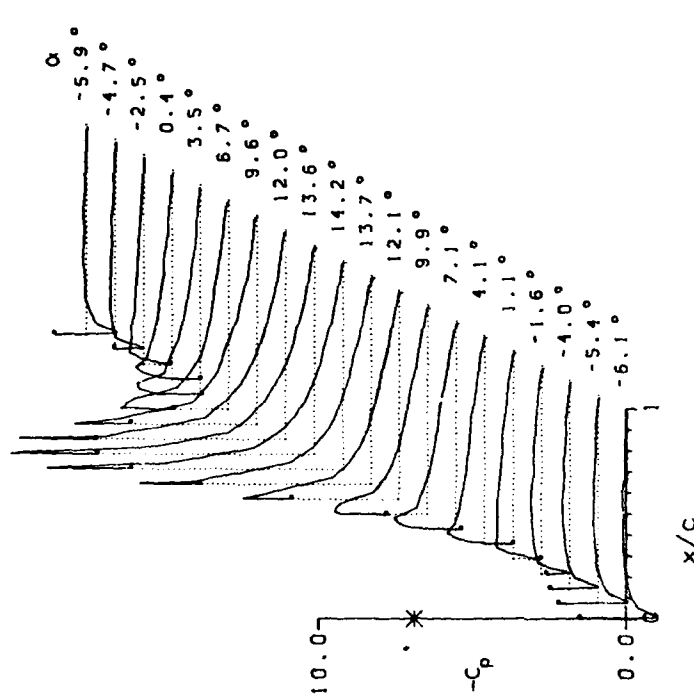
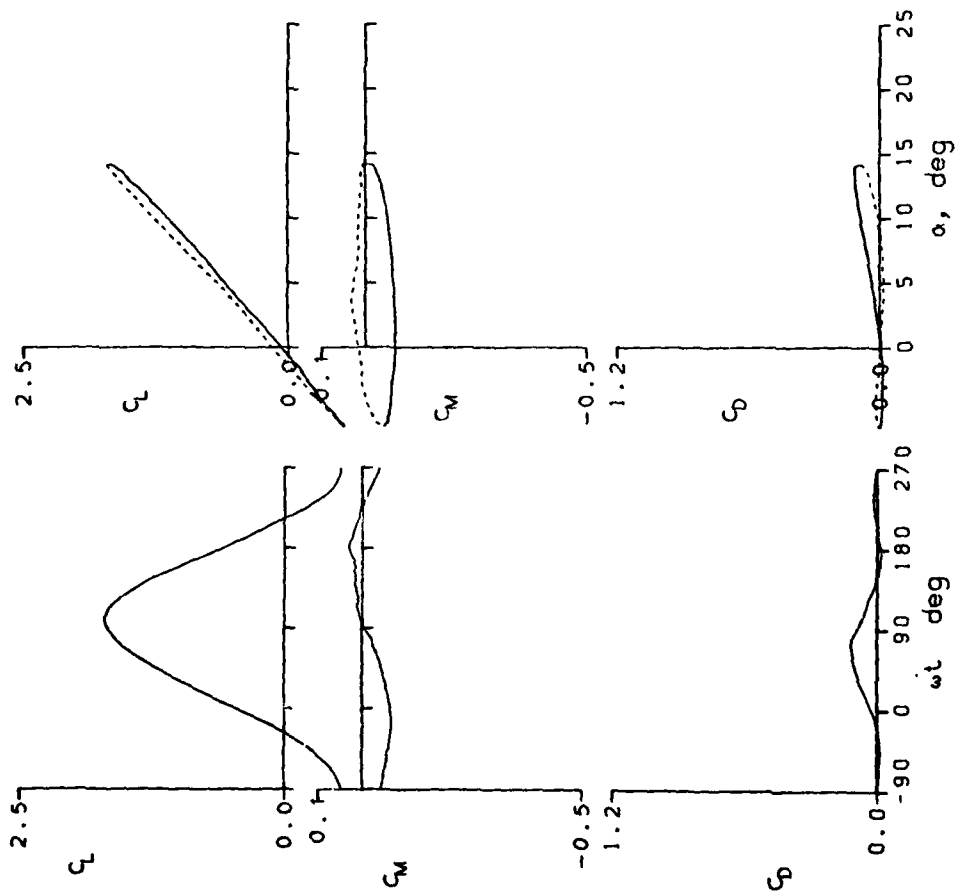


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37207	A0 = 9.94 °	k = 0.024
Re = 3.78 E6	A1 = 4.90 °	M = 0.302
$C_{Lmax} = 1.61$	$C_{Mmin} = -0.14$	$C_{Dmax} = 0.24$
$\alpha_{Lmax} = 14.3 °$	$\xi = -0.241$	$M_{max} = 1.247$
$\alpha_{Cmin} = 9.7 °$	$-C_{Dmax} = 9.2$	$\alpha_{Mmax} = 14.2 °$

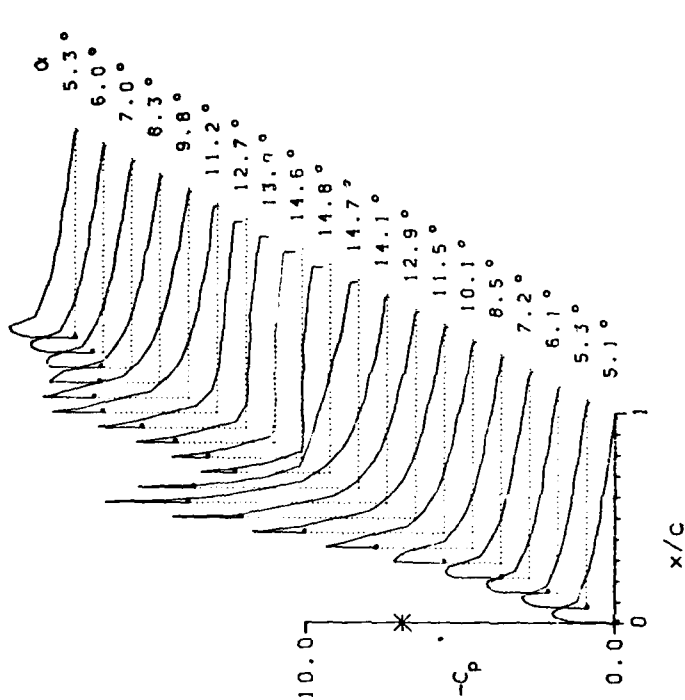
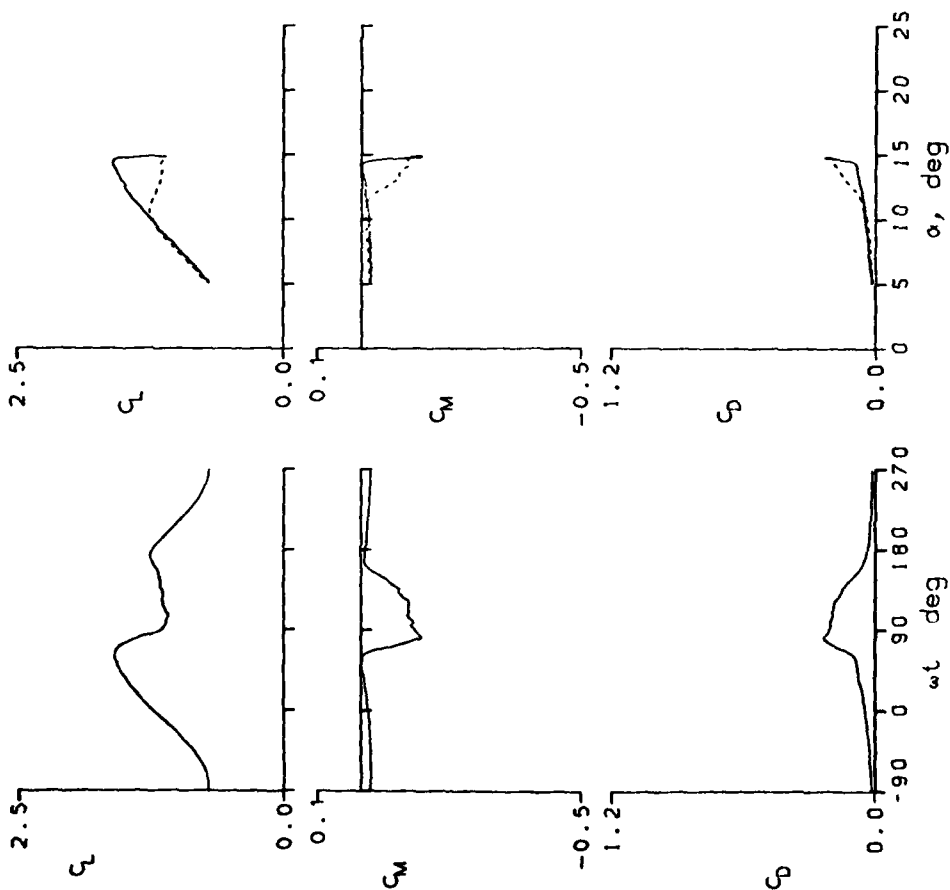


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37208 $A_0 = 9.93^\circ$ $k = 0.049$
 $R_0 = 3.75 \text{ E6}$ $A_1 = 4.91^\circ$ $M = 0.301$
 $C_{L_{\max}} = 1.67$ $C_{M_{\min}} = -0.16$ $C_{D_{\max}} = 0.26$
 $\alpha_{L_{\max}} = 14.7^\circ$ $\zeta = -0.152$ $M_{\max} = 1.287$
 $\alpha_{C_{M_{\min}}} = 9.7^\circ$ $-C_{D_{\max}} = 9.6$ $\alpha_{M_{\max}} = 14.6^\circ$

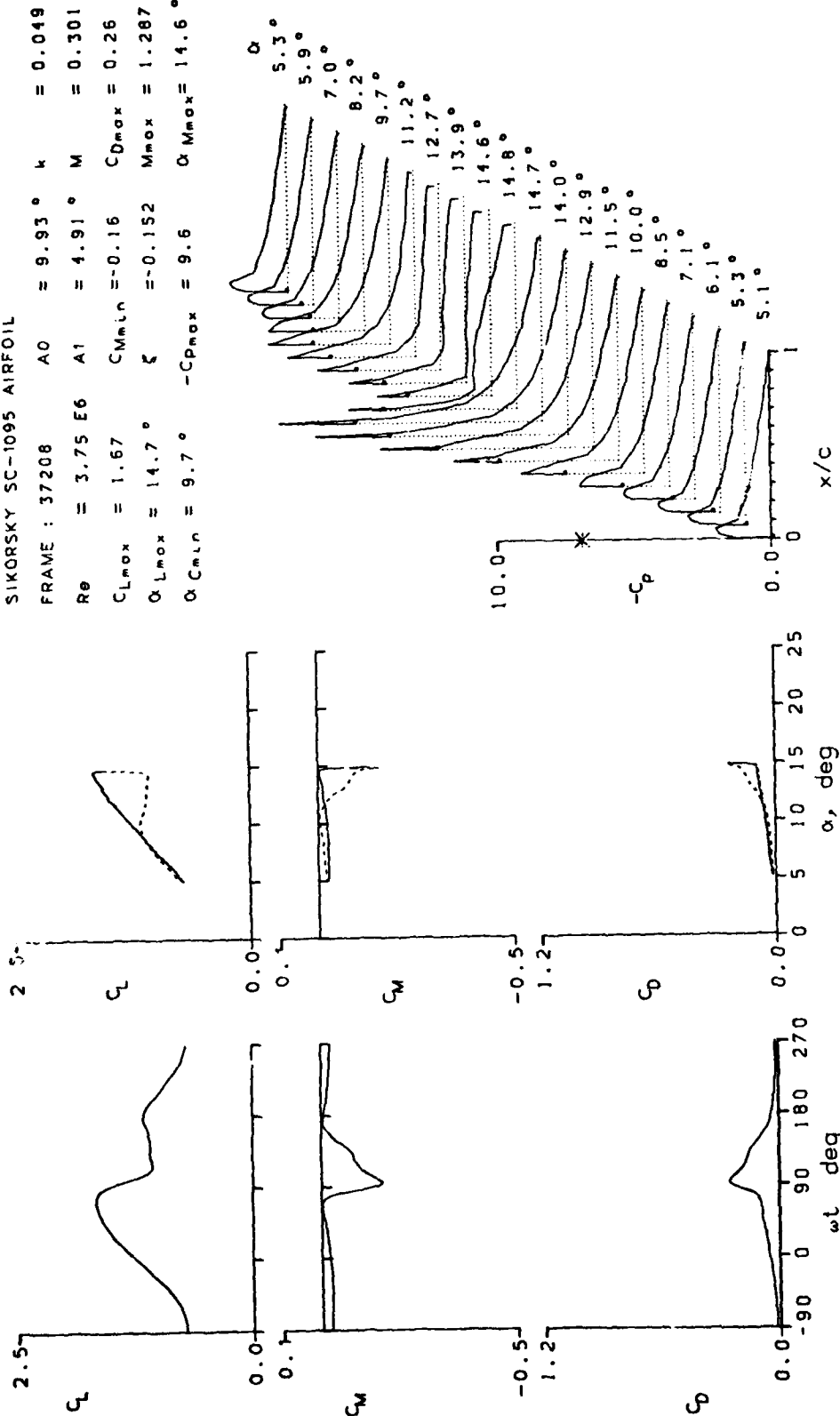


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37210	A0 = 9.92°	k = 0.097
Re = 3.76 E6	A1 = 4.91°	M = 0.302
CLmax = 1.73	CMmin = -0.16	CDmax = 0.27
αLmax = 14.8°	ξ = -0.039	Mmax = 1.332
αCmin = 9.7°	-CPmax = 9.9	αMmax = 14.8°

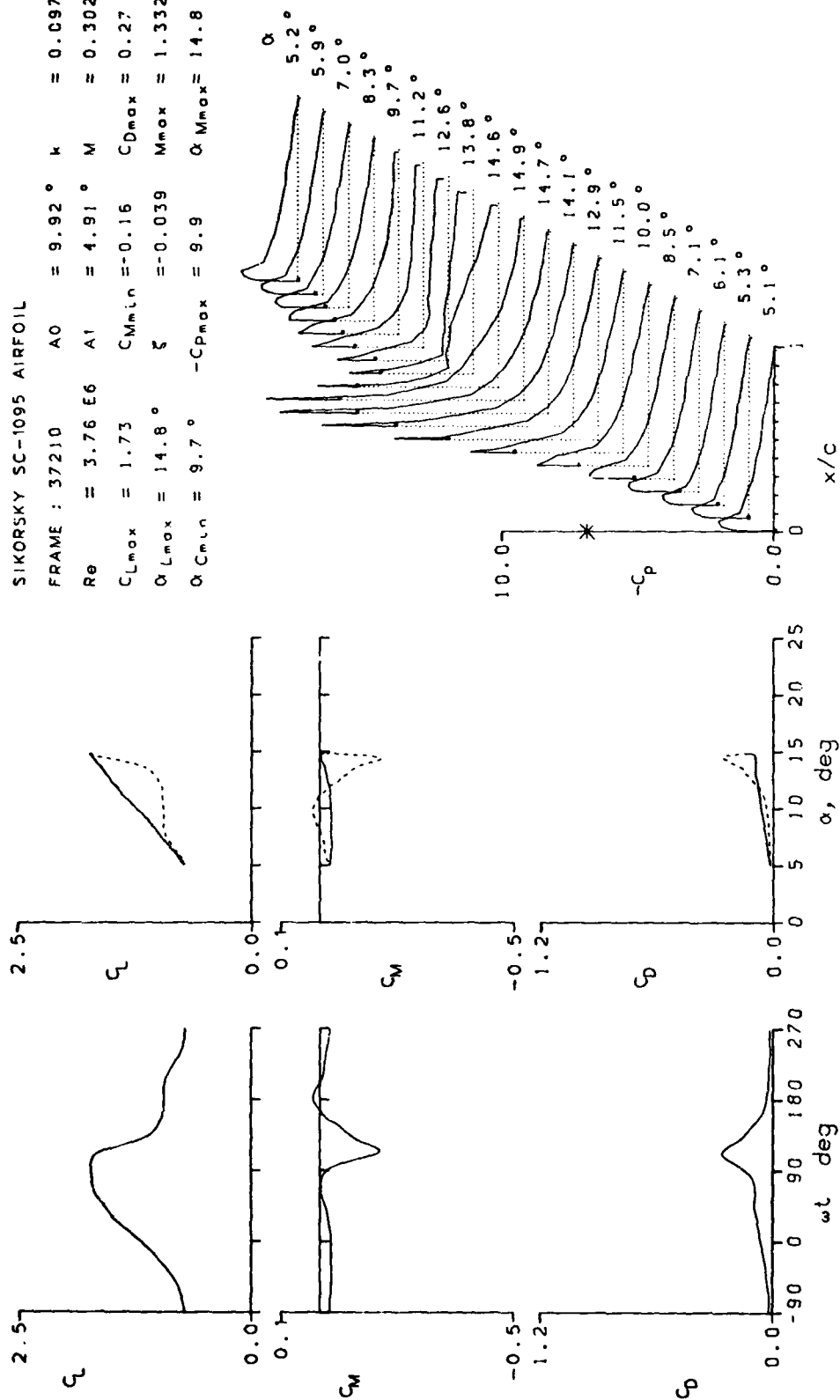


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37213	A0 = 9.93°	k = 0.145
Re = 3.78 E6	A1 = 4.90°	M = 0.303
C _{Lmax} = 1.77	C _{Mmin} = -0.17	C _{Dmax} = 0.27
α _{Lmax} = 14.8°	ξ = -0.037	M _{max} = 1.371
α _{Cmin} = 9.8°	-C _{pmax} = 10.1	α _{Mmax} = 14.9°

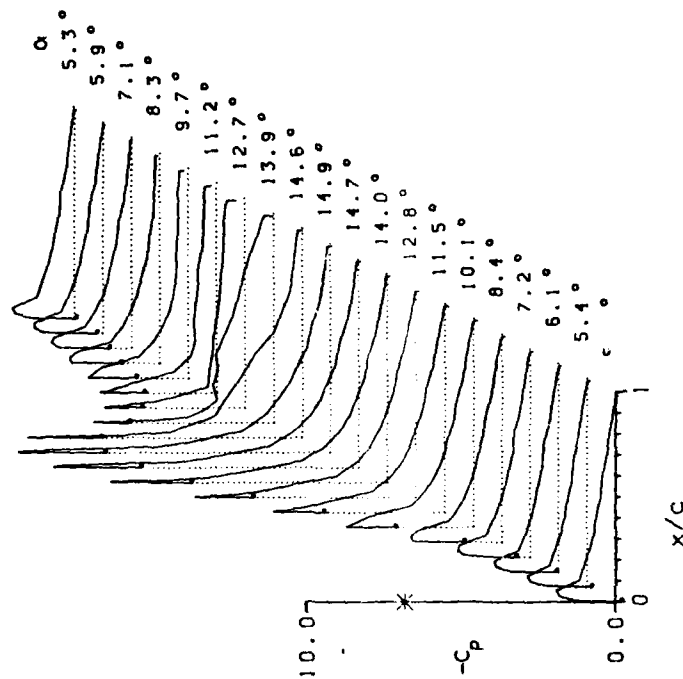
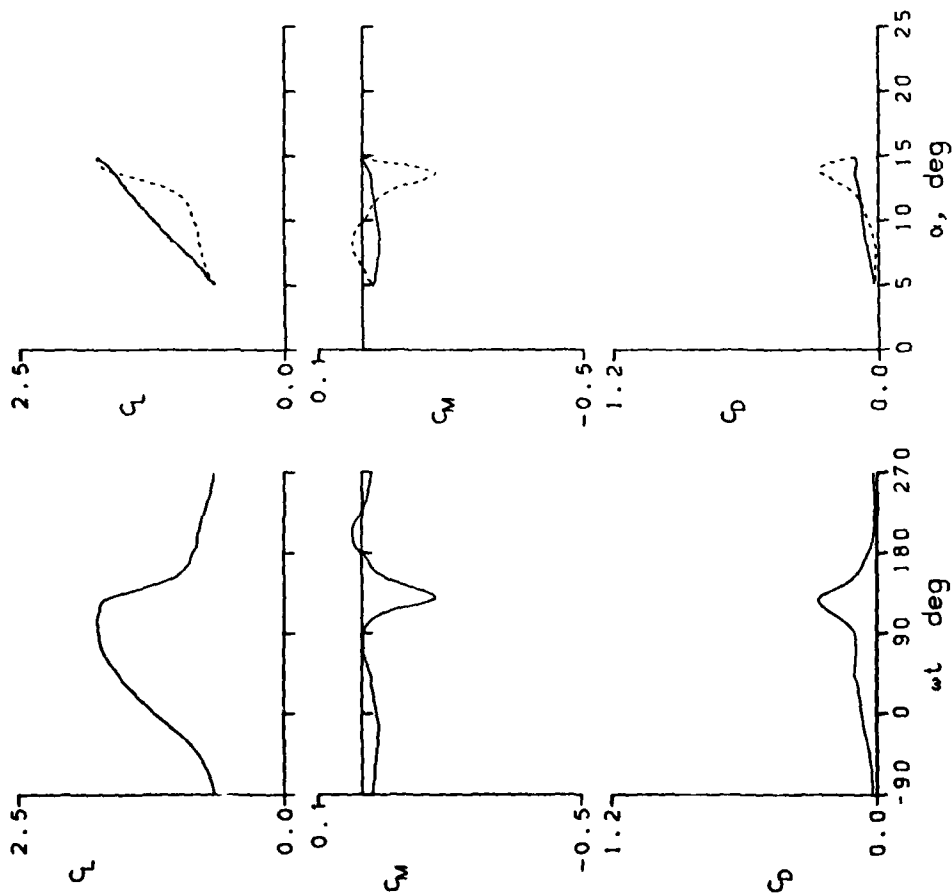


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 3721S $A_0 = 9.89^\circ$ $k = 0.194$
 $Re = 3.76 \text{ E}6$ $A_1 = 4.91^\circ$ $M = 0.303$
 $C_{Lmax} = 1.89$ $C_{Mmin} = -0.22$ $C_{Dmax} = 0.31$
 $\alpha_{Lmax} = 14.8^\circ$ $\xi = -0.045$ $M_{max} = 1.394$
 $\alpha_{C_{Lmin}} = 9.7^\circ$ $-C_{Dmax} = 10.3$ $\alpha_{Mmax} = 14.9^\circ$

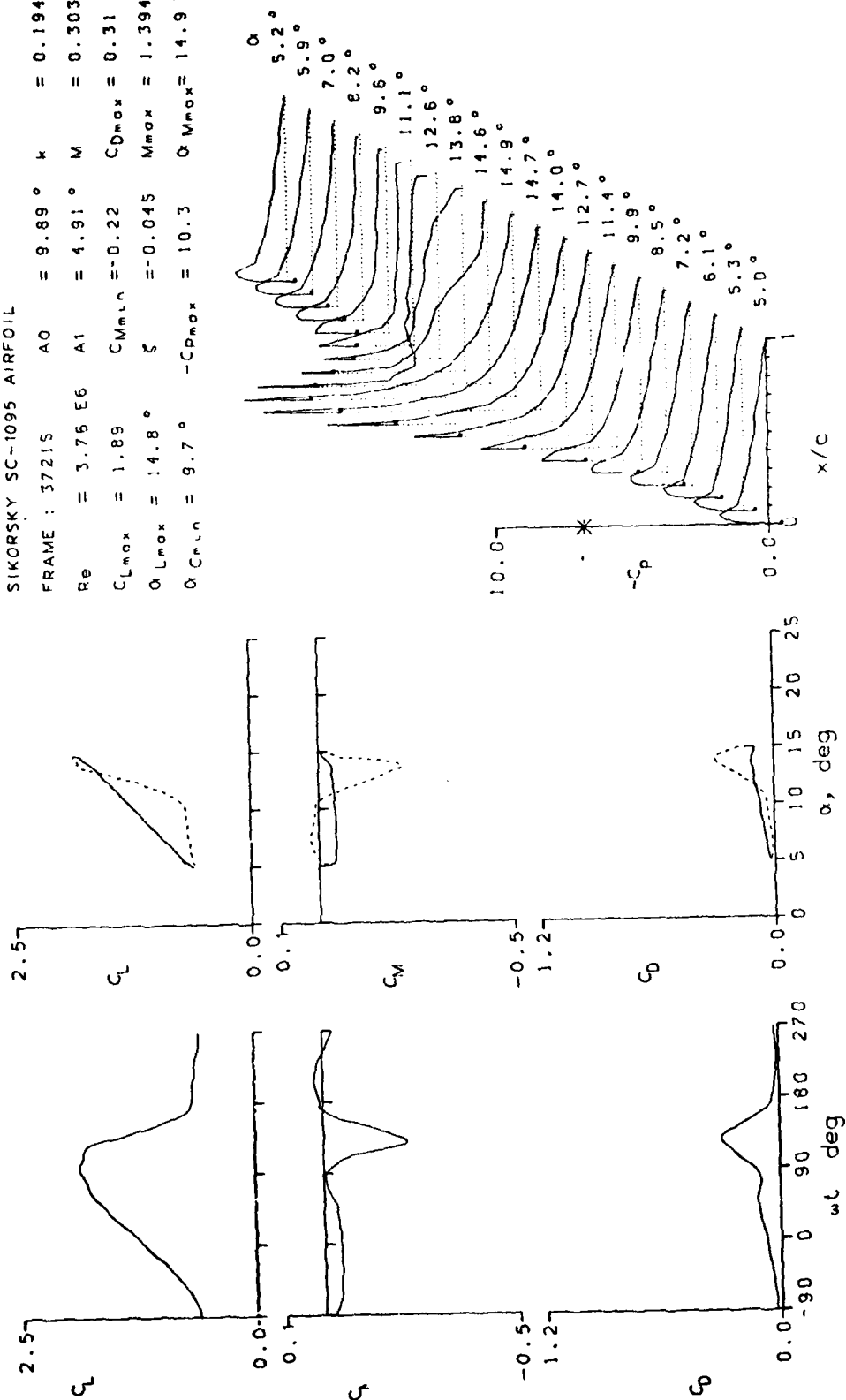


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37219 $A_0 = 10.93^\circ$ $k = 0.049$

$Re = 3.75 \text{ E}6$ $A_1 = 4.91^\circ$ $M = 0.301$

$C_{Lmax} = 1.72$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.32$

$\alpha_{Lmax} = 15.5^\circ$ $\xi = -0.191$ $M_{max} = 1.305$

$\alpha_{Cmin} = 10.7^\circ$ $-C_{pmax} = 9.8$ $\alpha_{Mmax} = 14.9^\circ$

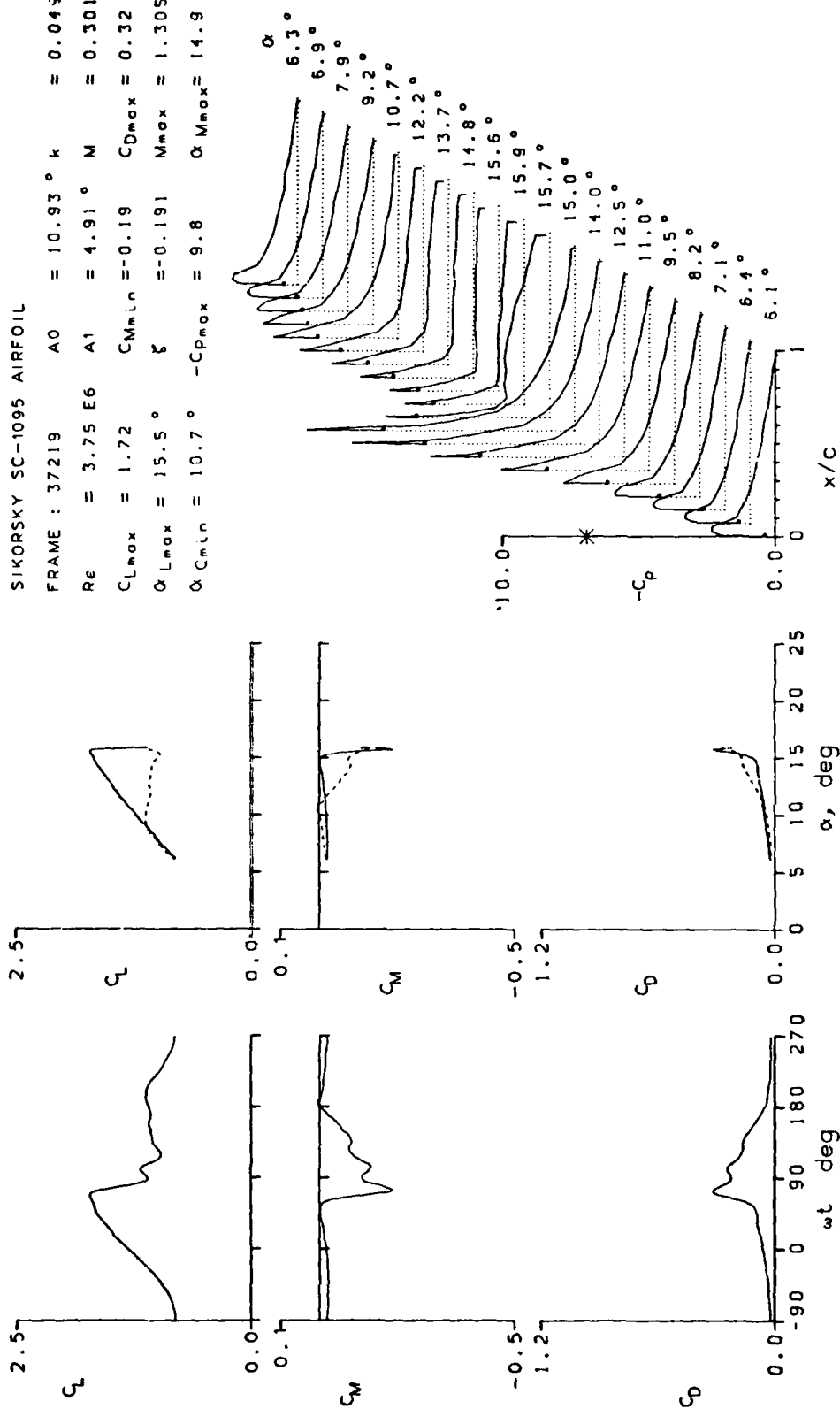


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37221 $A_0 = 10.93^\circ$ $k = 0.097$
 $Re = 3.75 \text{ E} 6$ $A_1 = 4.89^\circ$ $M = 0.302$
 $C_{Lmax} = 1.88$ $C_{Mmin} = -0.24$ $C_{Dmax} = 0.39$
 $\alpha_{Lmax} = 15.9^\circ$ $\xi = -0.087$ $M_{max} = 1.354$
 $\alpha_{Cmin} = 10.7^\circ$ $-C_{Pmax} = 10.1$ $\alpha_{Mmax} = 15.5^\circ$

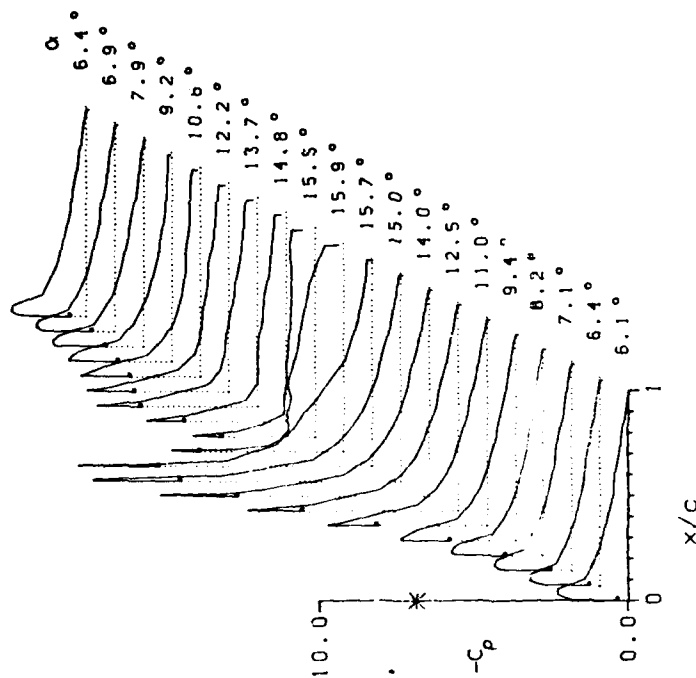
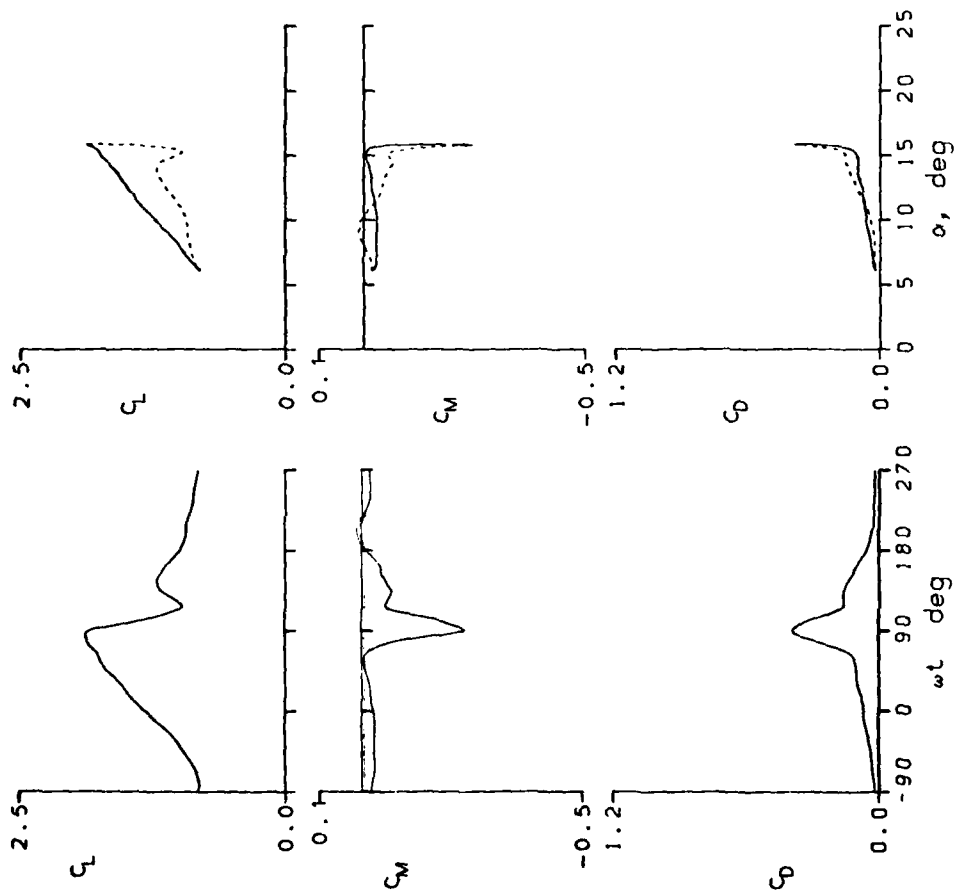


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 37304 $A_0 = 11.88^\circ$ $k = 0.050$
 $Re = 4.00 E6$ $A_1 = 7.90^\circ$ $M = 0.301$
 $C_{Lmax} = 1.97$ $C_{Mmin} = -0.26$ $C_{Dmax} = 0.47$
 $\alpha_{Lmax} = 16.7^\circ$ $\zeta = 0.098$ $M_{max} = 1.363$
 $\alpha_{Cmin} = 11.4^\circ$ $-C_{pmax} = 10.2$ $\alpha_{Mmax} = 15.7^\circ$

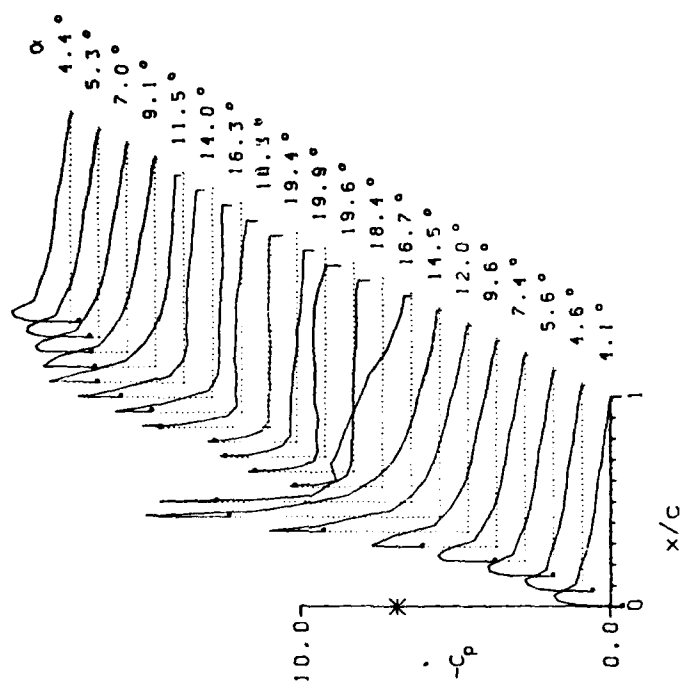
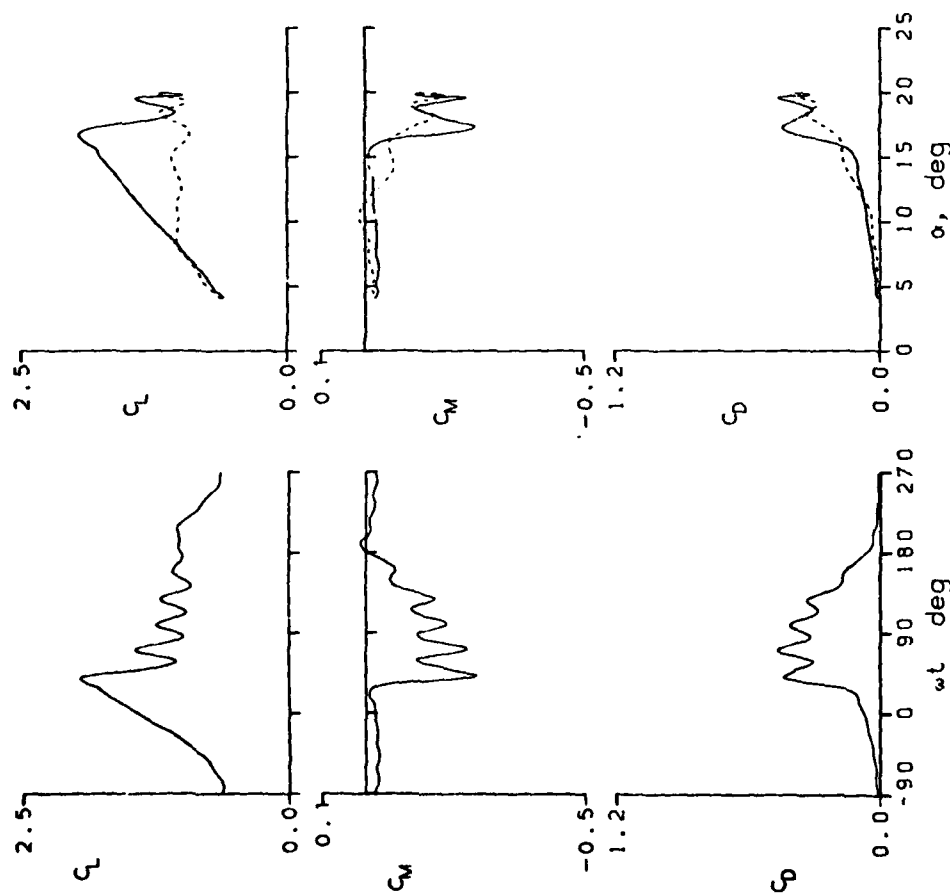


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37305 $A_0 = 11.86^\circ$ $k = 0.100$
 $R_c = 3.98 E6$ $A_1 = 7.90^\circ$ $M = 0.301$
 $C_{Lmax} = 2.12$ $C_{Mmin} = -0.34$ $C_{Dmax} = 0.57$
 $\alpha_{Lmax} = 17.7^\circ$ $\xi = 0.249$ $M_{max} = 1.409$
 $\alpha_{Cmin} = 11.4^\circ$ $-C_{Pmax} = 10.6$ $\alpha_{Mmax} = 16.2^\circ$

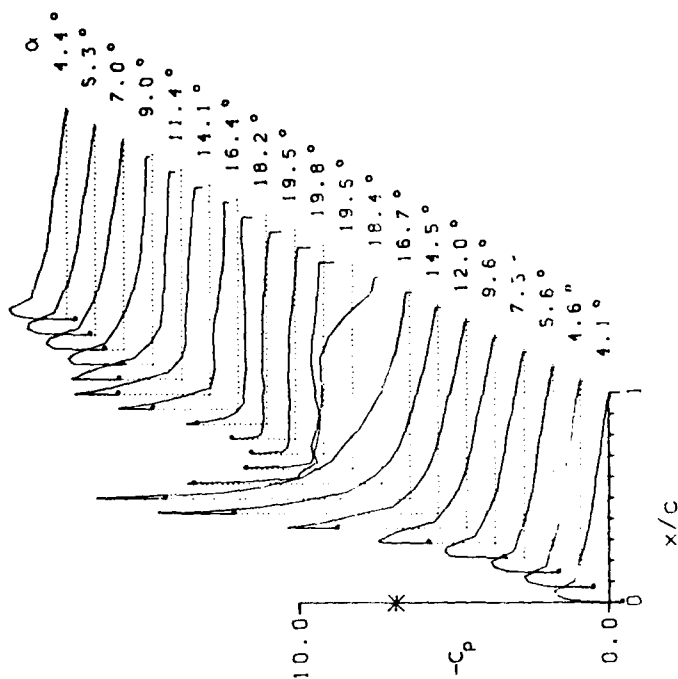
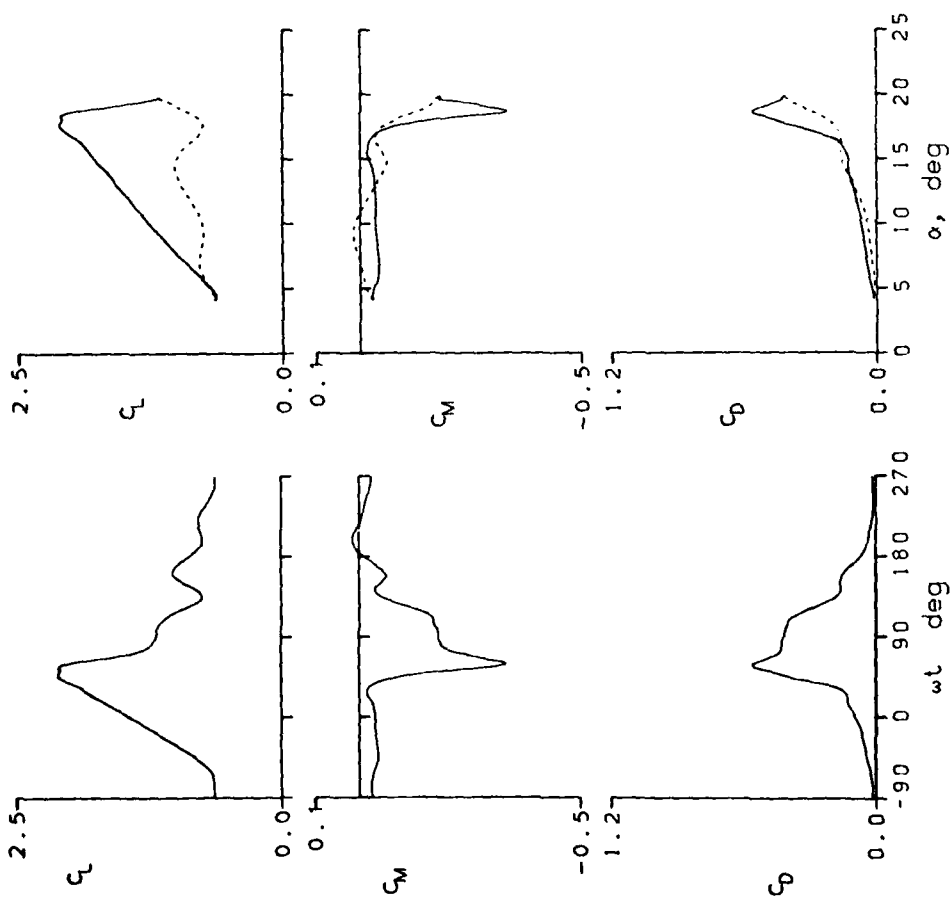


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 37306 $A_0 = 11.91^\circ$ $k = 0.127$
 $Re = 3.97 \text{ E}6$ $A_1 = 7.89^\circ$ $M = 0.301$
 $C_{Lmax} = 2.25$ $C_{Mmin} = -0.39$ $C_{Dmax} = 0.69$
 $\alpha_{Lmax} = 18.7^\circ$ $\xi = 0.158$ $M_{max} = 1.412$
 $\alpha_{Cmin} = 11.6^\circ$ $-C_{Dmax} = 10.6$ $\alpha_{Mmax} = 17.0^\circ$

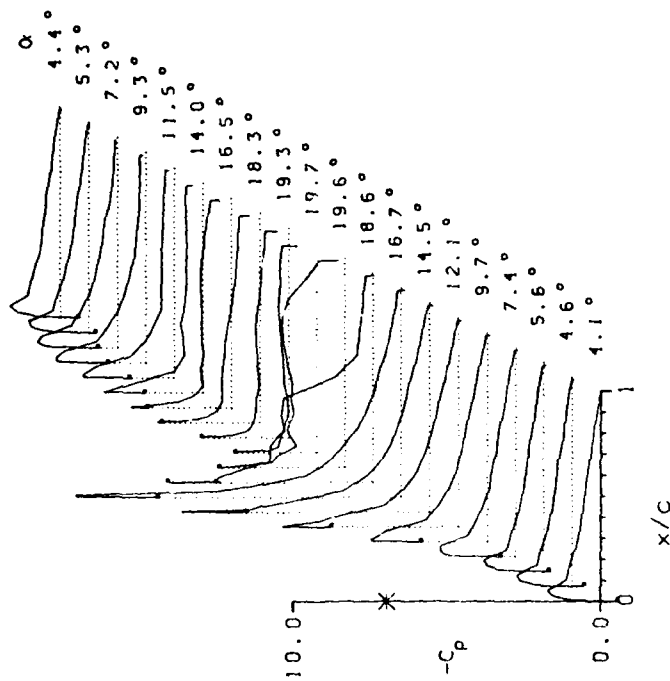
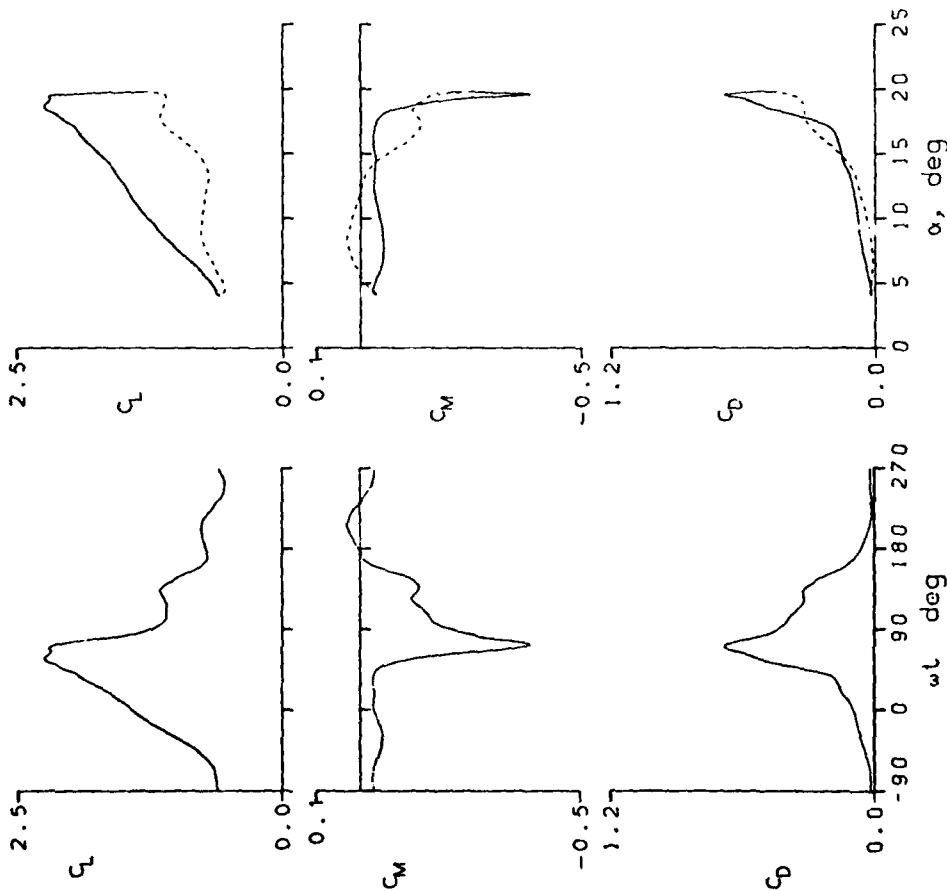


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 35021 $A_0 = 14.98^\circ$ $k = 0.025$
 $Re = 3.95 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.74$ $C_{Mmax} = -0.19$ $C_{Dmax} = 0.31$
 $C_{Lmax} = 15.2^\circ$ $C_{Mmax} = -0.050$ $M_{max} = 1.282$
 $C_{Lmin} = 14.8^\circ$ $-C_{Dmax} = 9.5$ $\alpha_{Mmax} = 14.7^\circ$

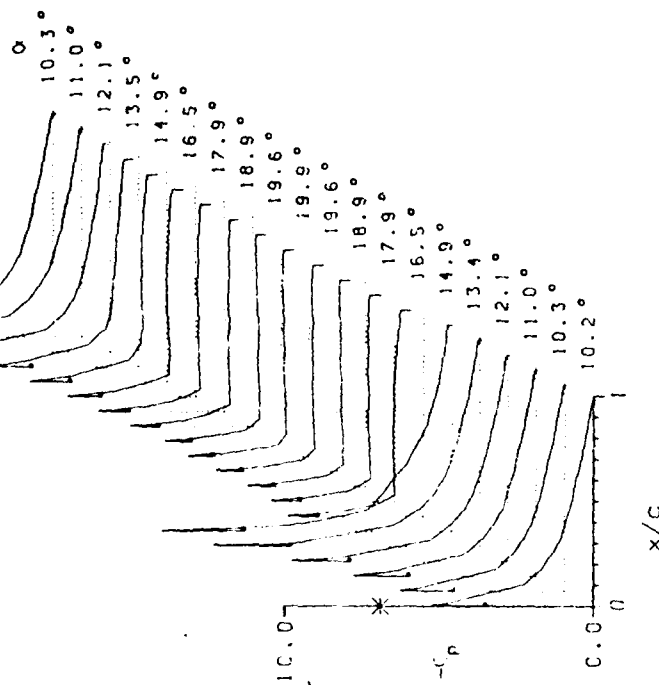
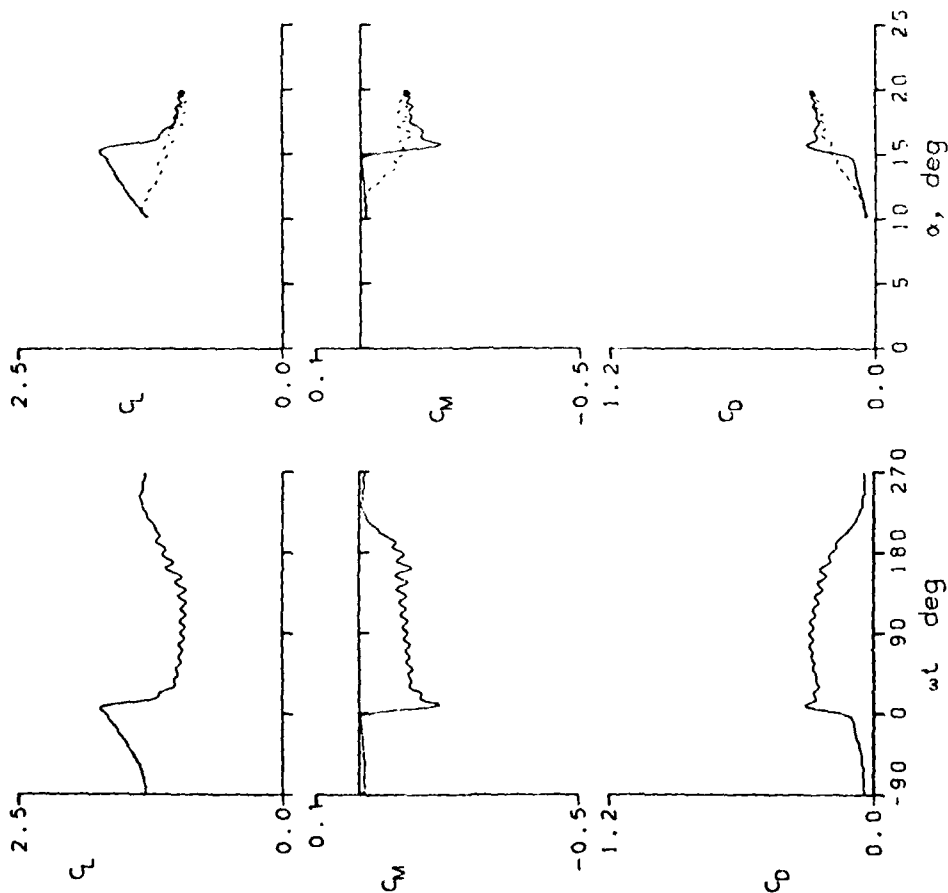


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 38022 $A_0 = 14.98^\circ$ $k = 0.050$
 $Re = 3.89 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.299$
 $C_{Lmax} = 1.89$ $C_{Mmin} = -0.23$ $C_{Dmax} = 0.40$
 $\alpha_{Lmax} = 16.2^\circ$ $\xi = 0.195$ $M_{max} = 1.316$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 15.2^\circ$

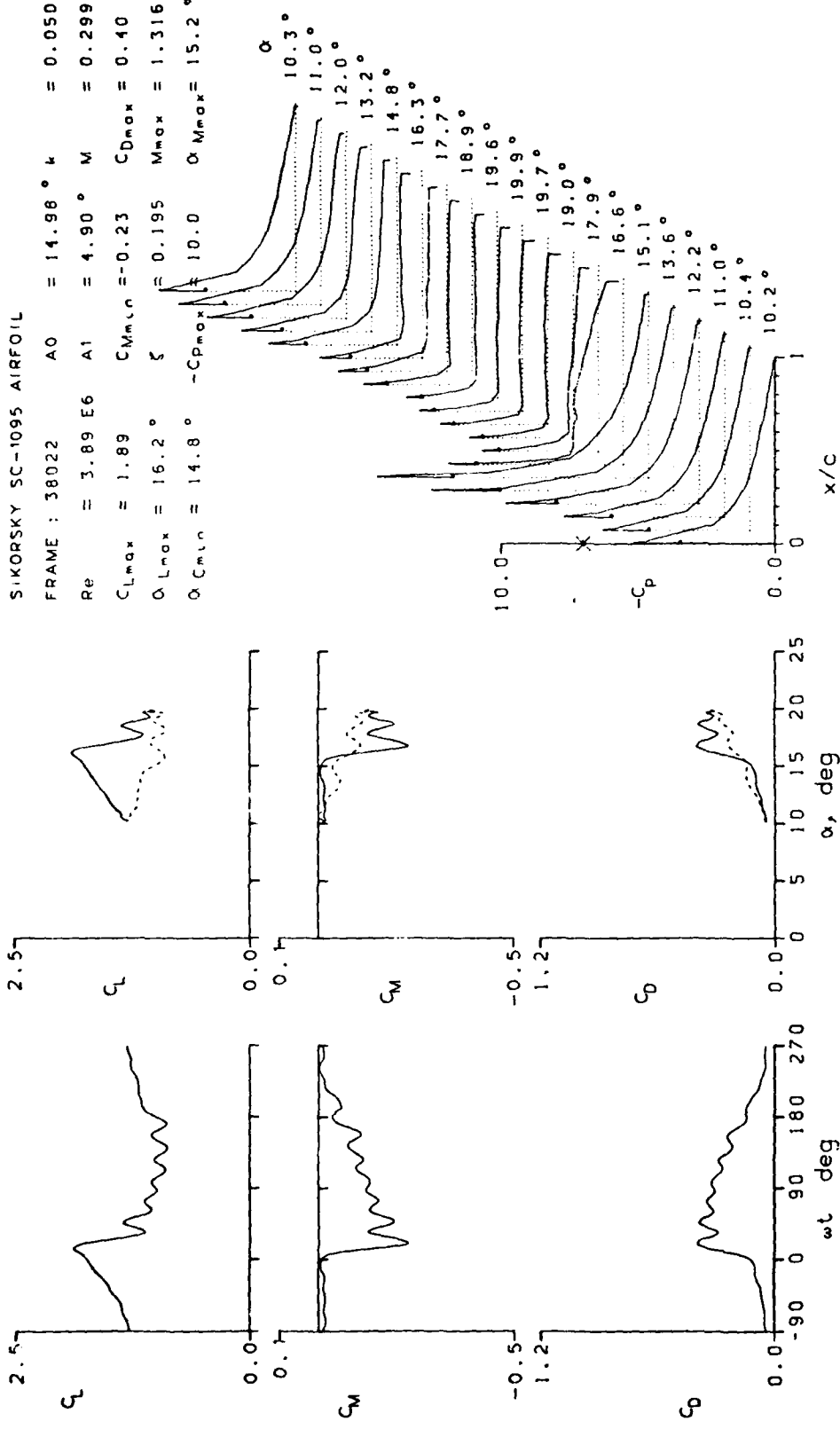


Figure 15.- Continued.

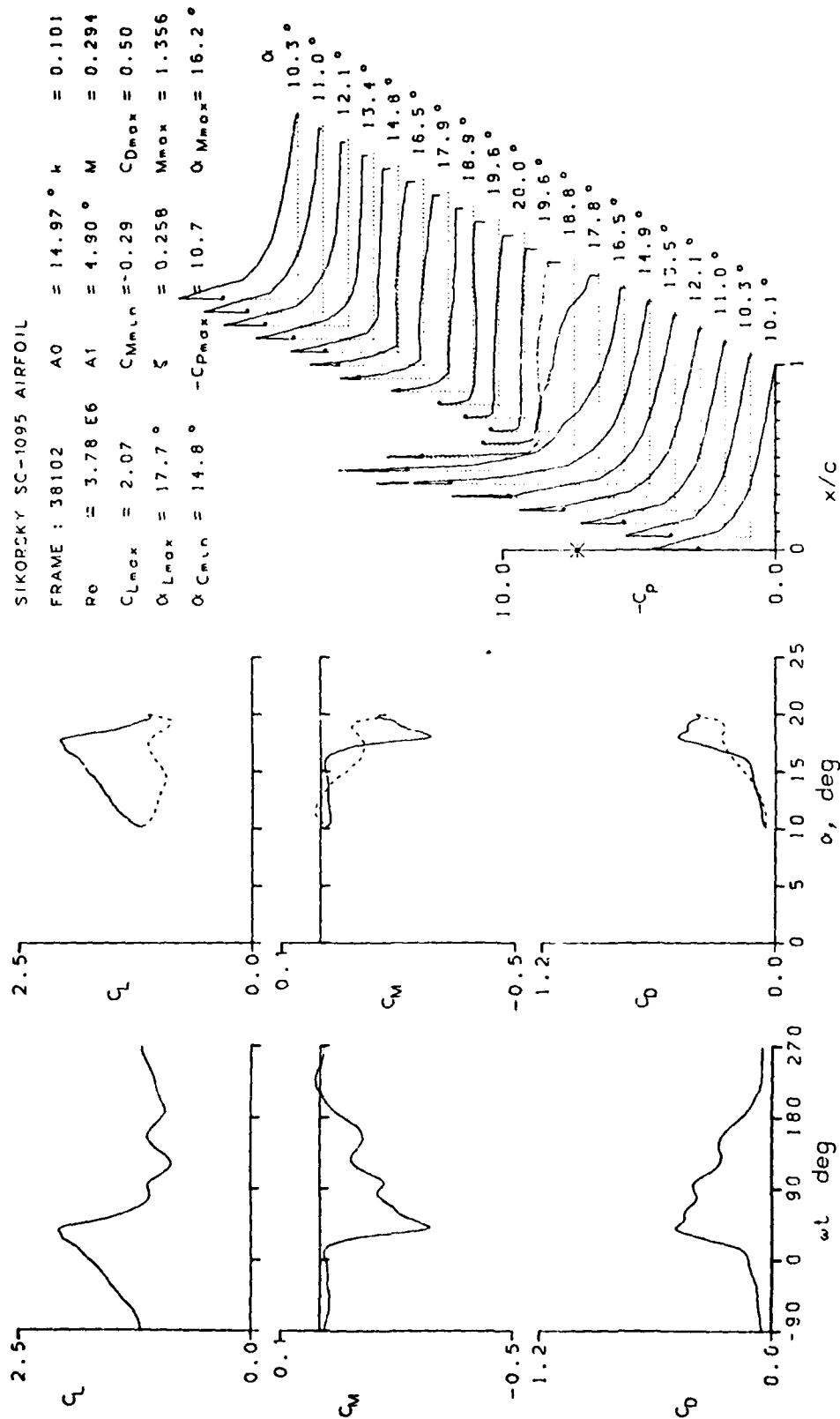


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 38103	$A_0 = 14.94^\circ$	$k = 0.152$
$Re = 3.75 \times 10^6$	$A_1 = 4.91^\circ$	$M = 0.293$
$C_{Lmax} = 2.16$	$C_{Mmin} = -0.34$	$C_{Dmax} = 0.62$
$\alpha_{Lmax} = 18.7^\circ$	$\xi = 0.404$	$M_{max} = 1.370$
$\alpha_{C_{min}} = 14.8^\circ$	$-C_{Dmax} = 10.9$	$\alpha_{Mmax} = 16.5^\circ$

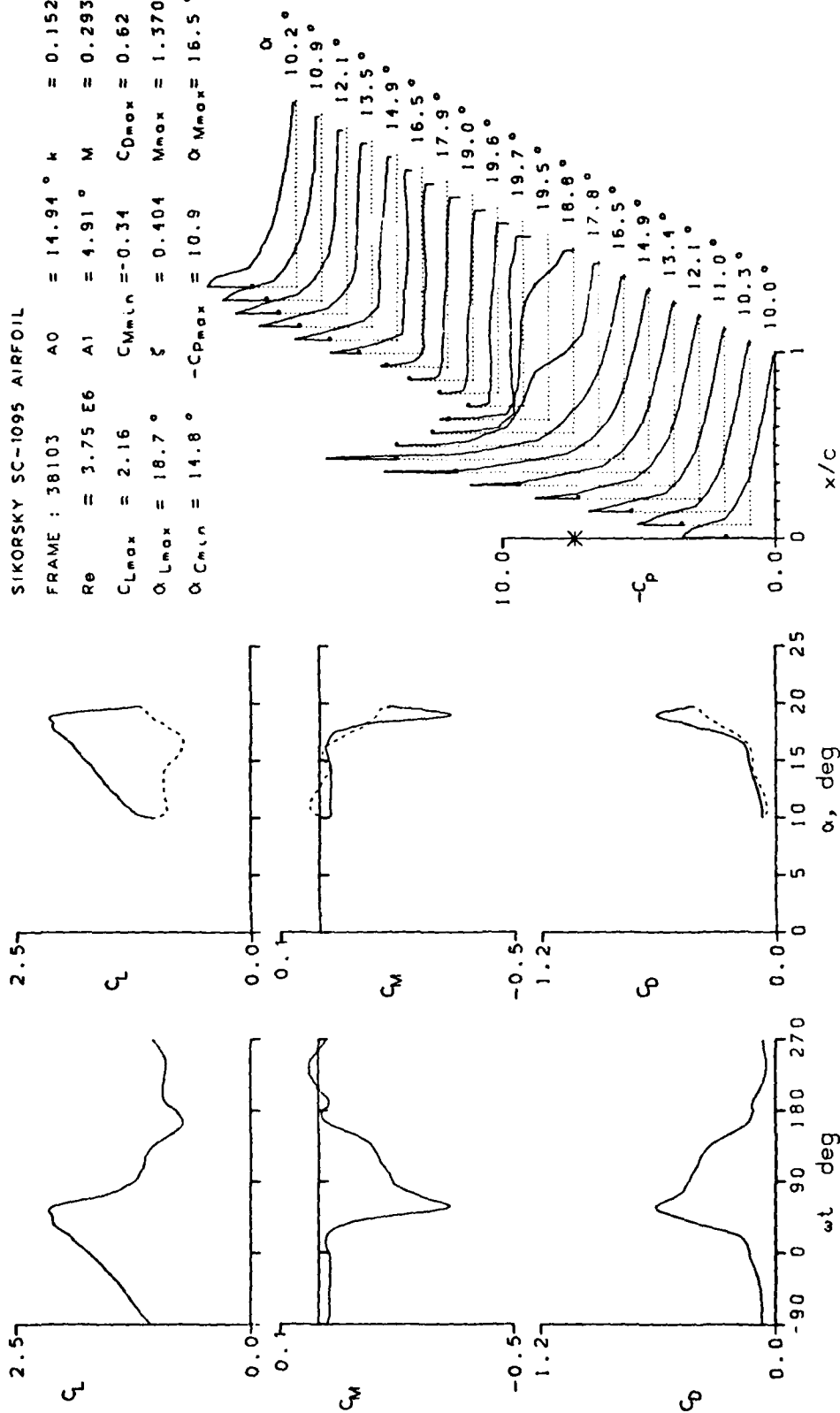


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 38104	A0 = 14.95°	k = 0.205
Re = 3.69 E6	A1 = 4.87°	M = 0.289
C _{Lmax} = 2.30	C _{Mmin} = -0.43	C _{Dmax} = 0.75
α _{Lmax} = 19.0°	ξ = -0.062	M _{max} = 1.354
α _{Cmin} = 14.7°	-C _{pmax} = 11.1	α _{Mmax} = 17.0°

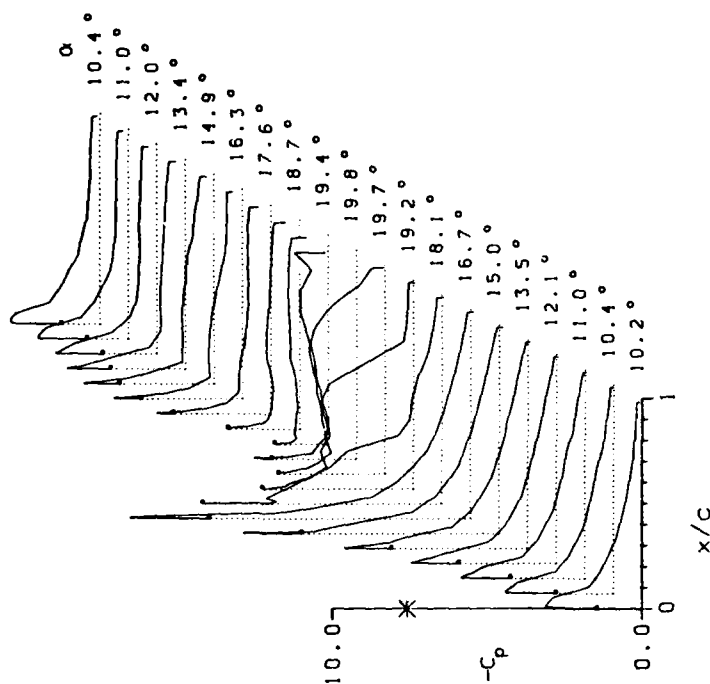
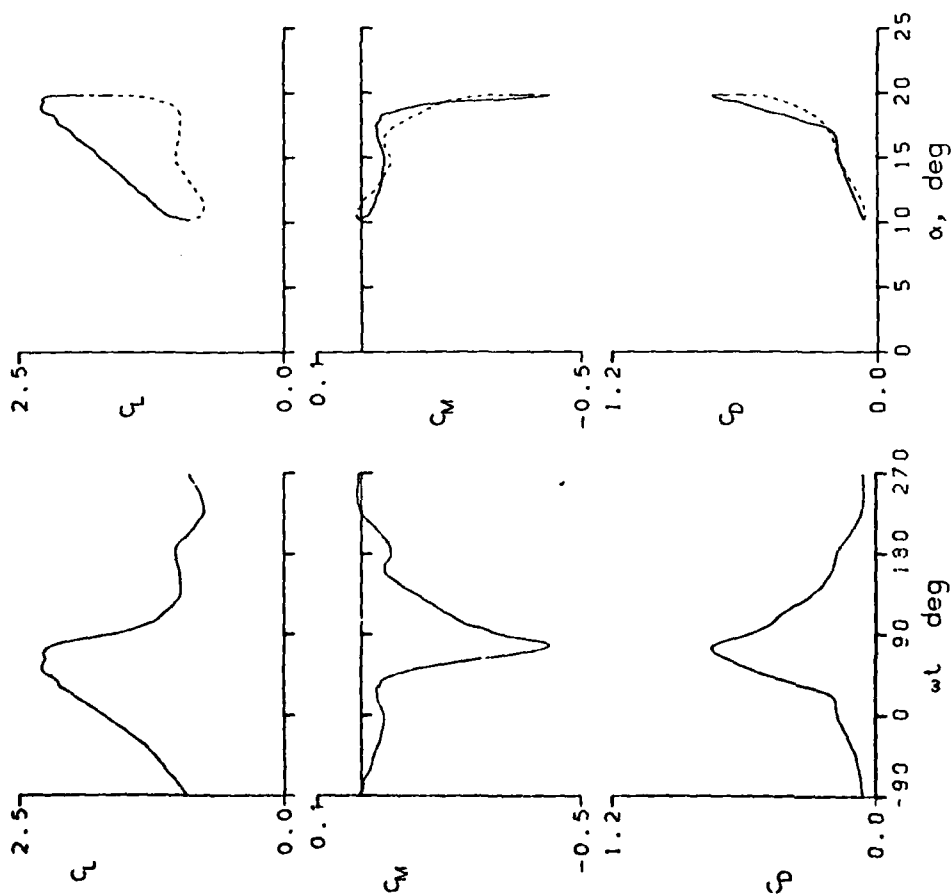


Figure 15.- Continued.

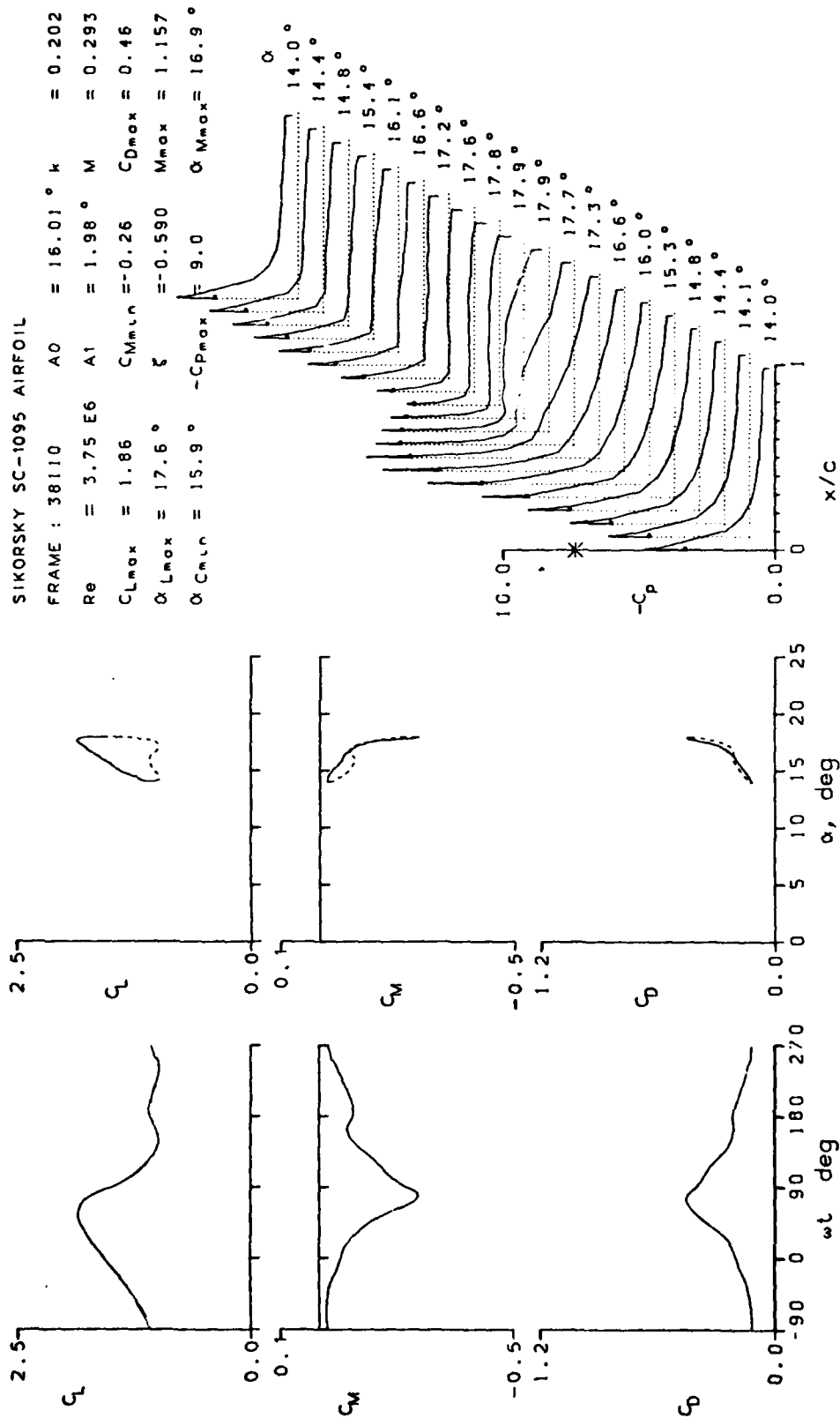


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 38119 $A_0 = 13.93^\circ$ $k = 0.198$
 $Re = 3.85 \times 10^6$ $A_1 = 2.00^\circ$ $M = 0.300$
 $C_{Lmax} = 1.97$ $C_{Mmin} = -0.25$ $C_{Dmax} = 0.40$
 $\alpha_{C_{Lmax}} = 16.0^\circ$ $\zeta = -1.898$ $M_{max} = 1.368$
 $\alpha_{C_{Mmin}} = 13.8^\circ$ $-C_{Dmax} = 10.3$ $\alpha_{M_{max}} = 15.6^\circ$

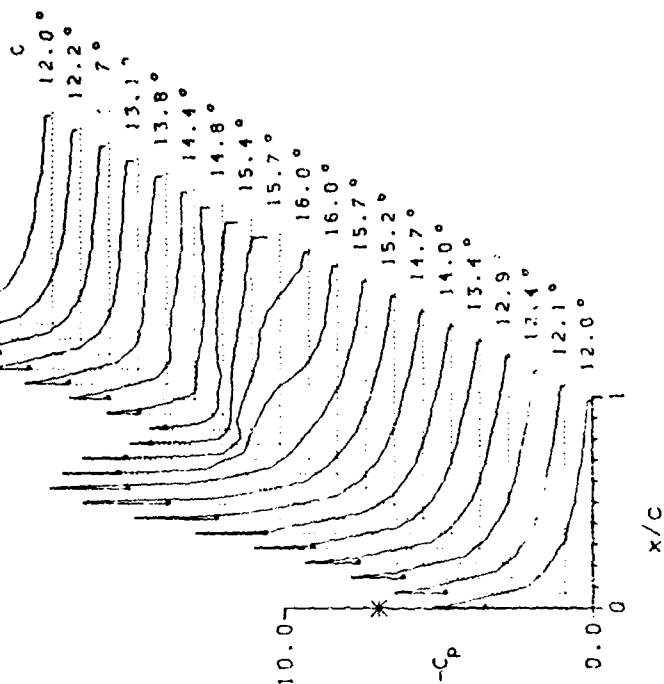
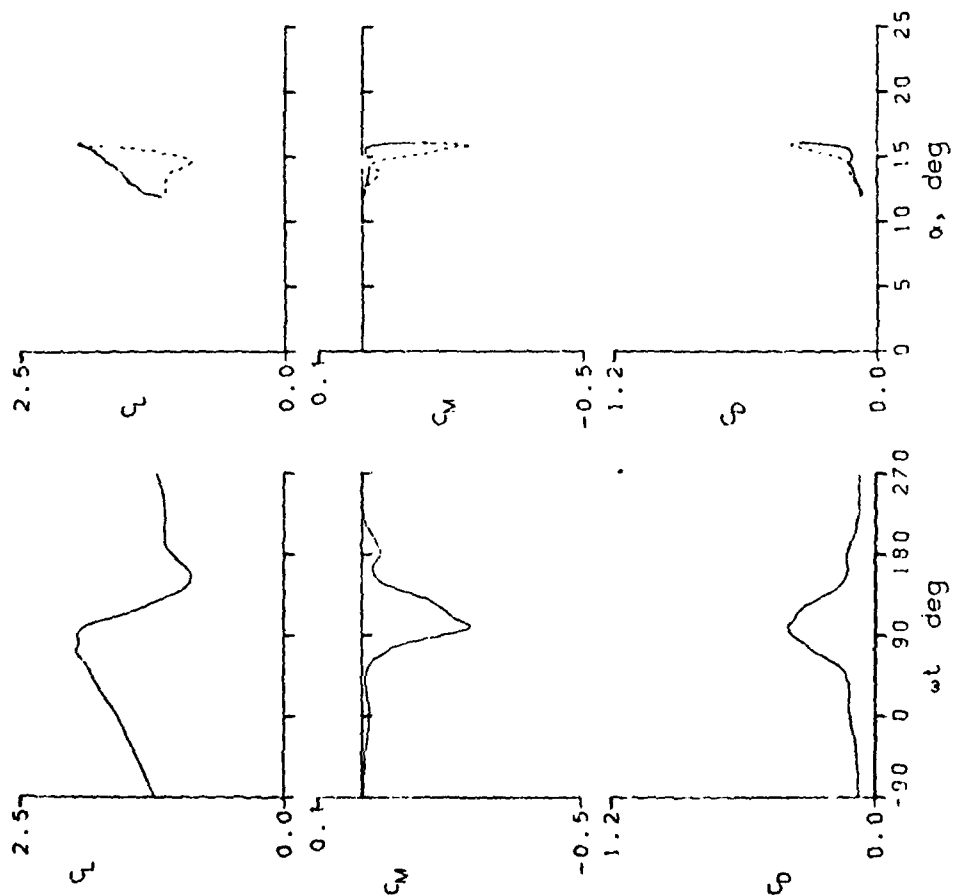


Figure 15.- Continued.

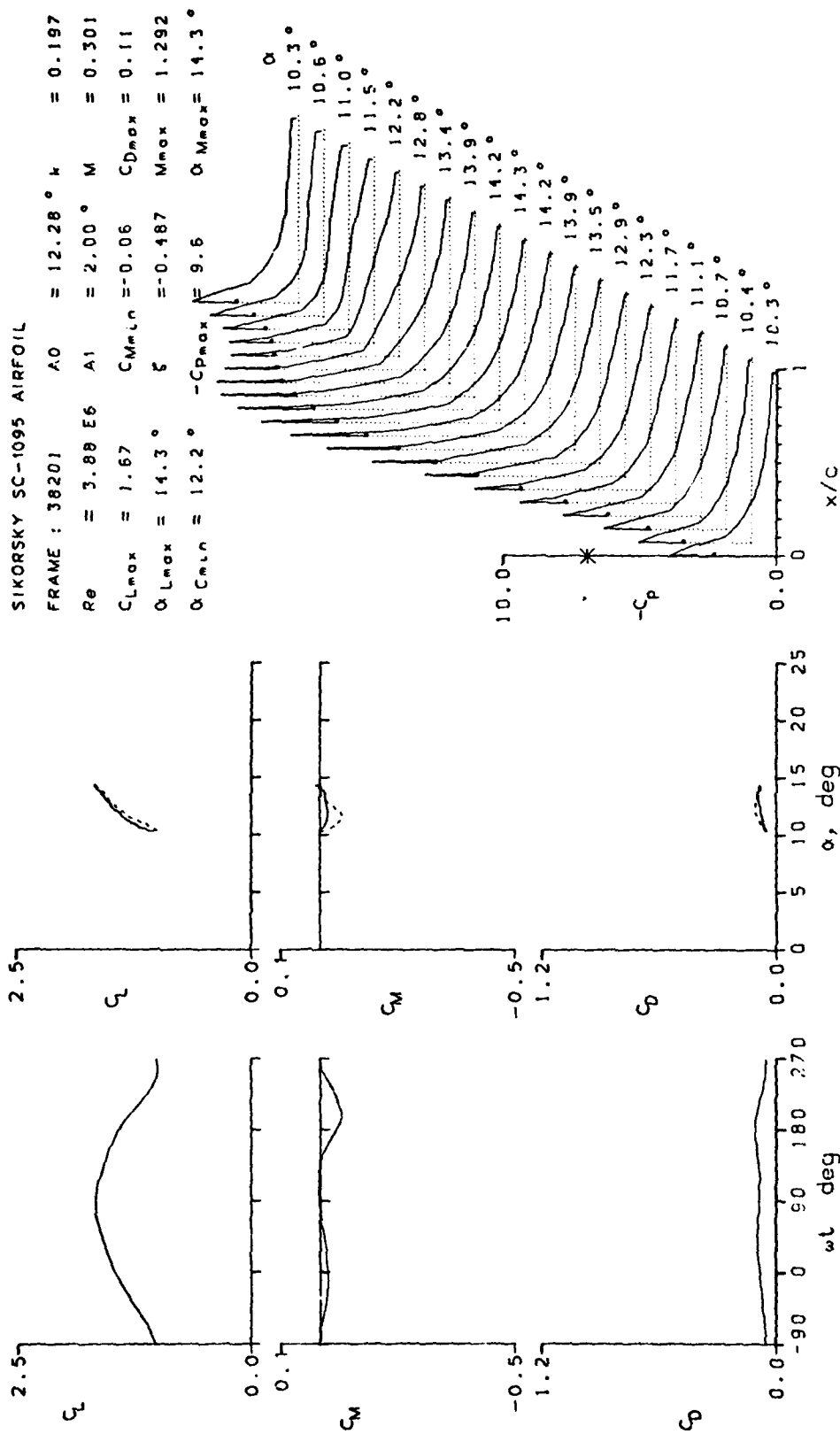


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 38216	A0 = 6.02°	k = 0.010
Re = 2.47 E6	A1 = 10.02°	M = 0.183
CLmax = 1.70	CMmin = -0.14	CDmax = 0.24
αLmax = 15.4°	ξ = -0.075	Mmax = 0.654
αChin = 5.5°	-CPmax = 9.9	αMmax = 15.2°

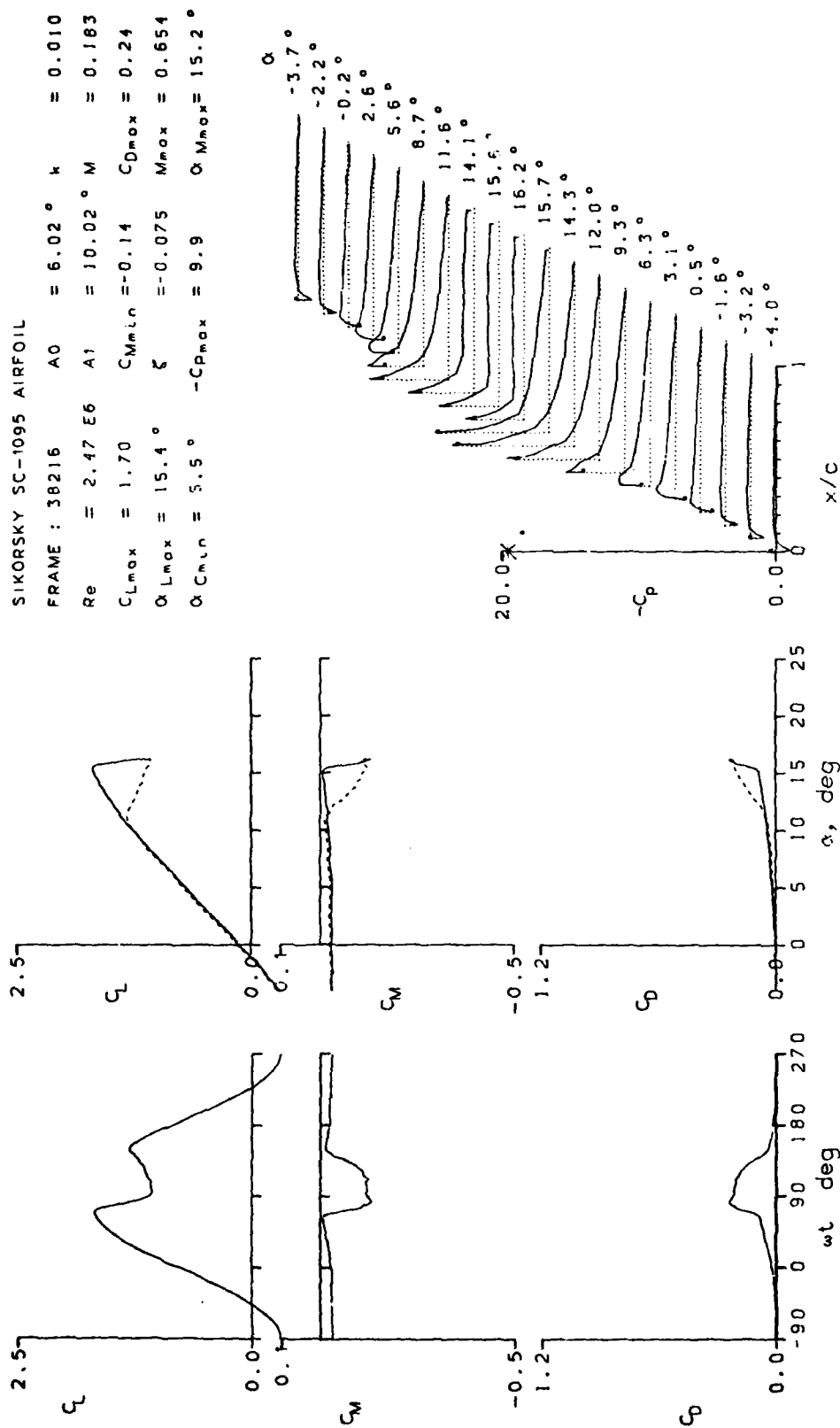


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 38300 $\alpha_0 = 14.86^\circ$ $k = 0.010$
 $Re = 3.95 \text{ E}6$ $A1 = 9.93^\circ$ $M = 0.298$
 $C_{Lmax} = 1.68$ $C_{Mmin} = -0.18$ $C_{Dmax} = 0.42$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.007$ $M_{max} = 1.227$
 $\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.4^\circ$

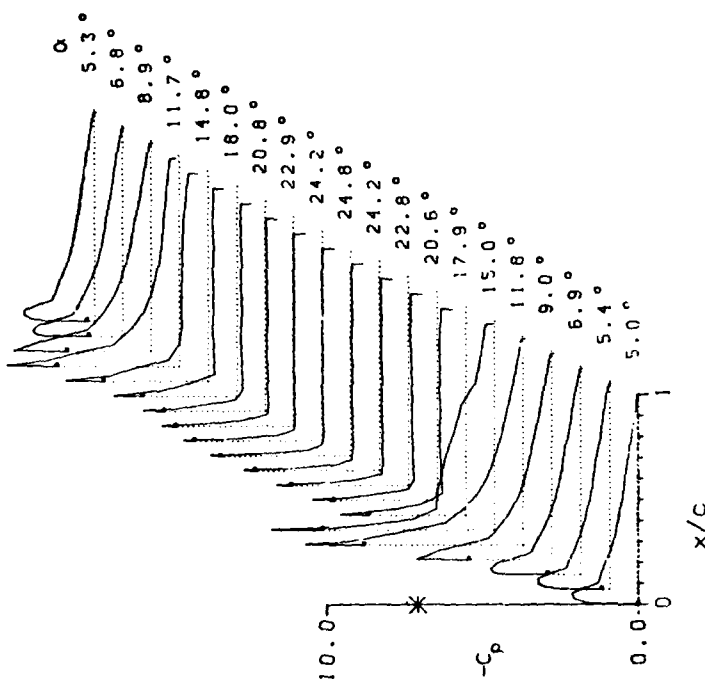
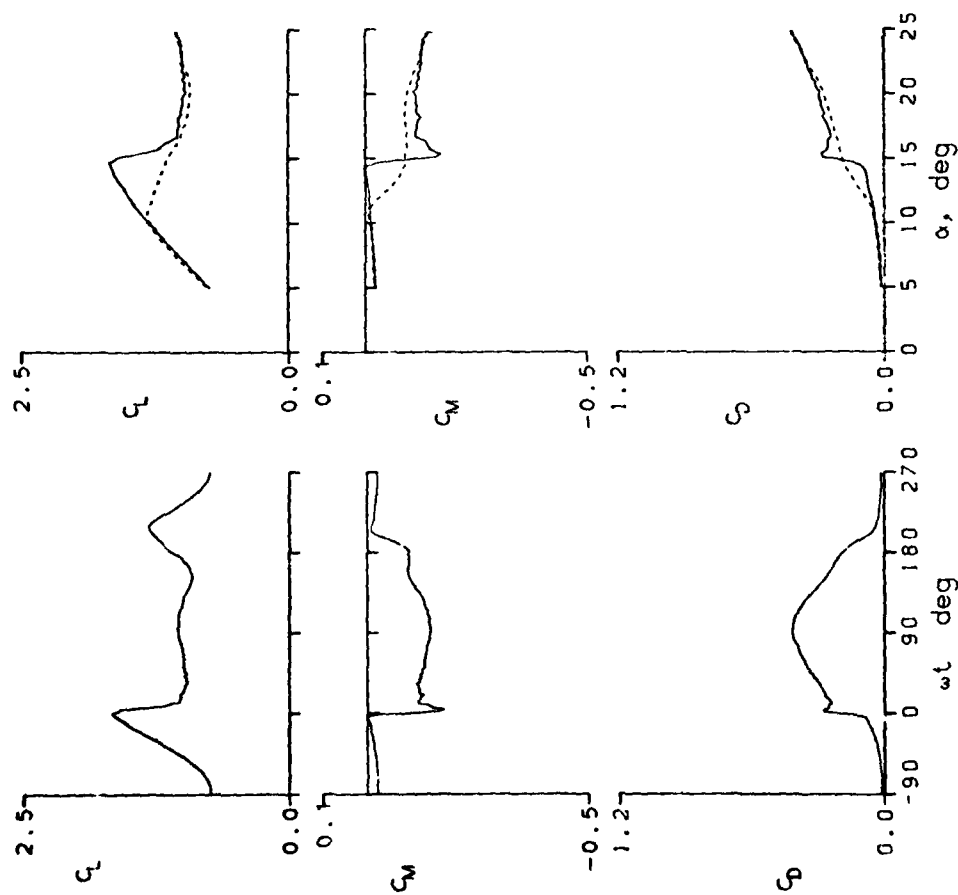


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL

FRAME : 38306 $A_0 = 9.86^\circ$ $k = 0.010$
 $R_0 = 3.93 E 6$ $A_1 = 9.86^\circ$ $M = 0.299$
 $C_{Lmax} = 1.66$ $C_{Mmin} = -0.16$ $C_{Dmax} = 0.29$
 $\alpha_{Lmax} = 14.5^\circ$ $\xi = -0.009$ $M_{max} = 1.229$
 $\alpha_{Cmin} = 9.4^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.3^\circ$

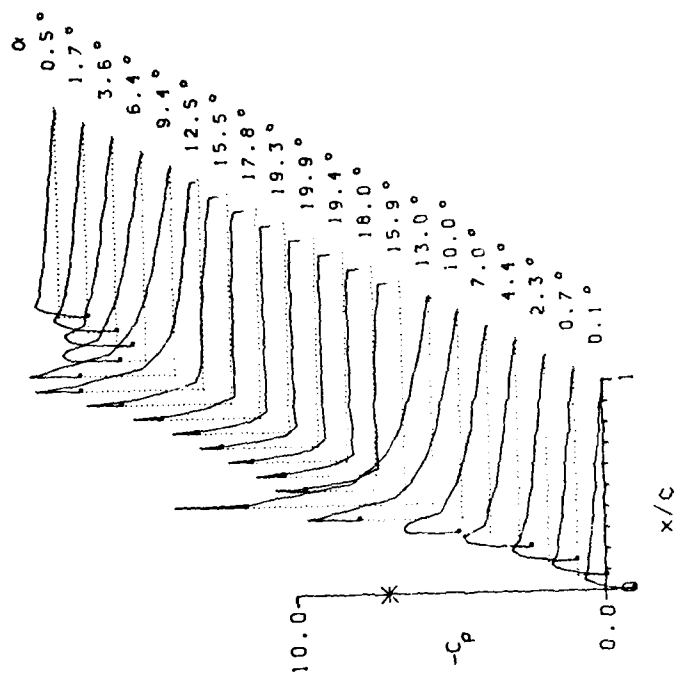
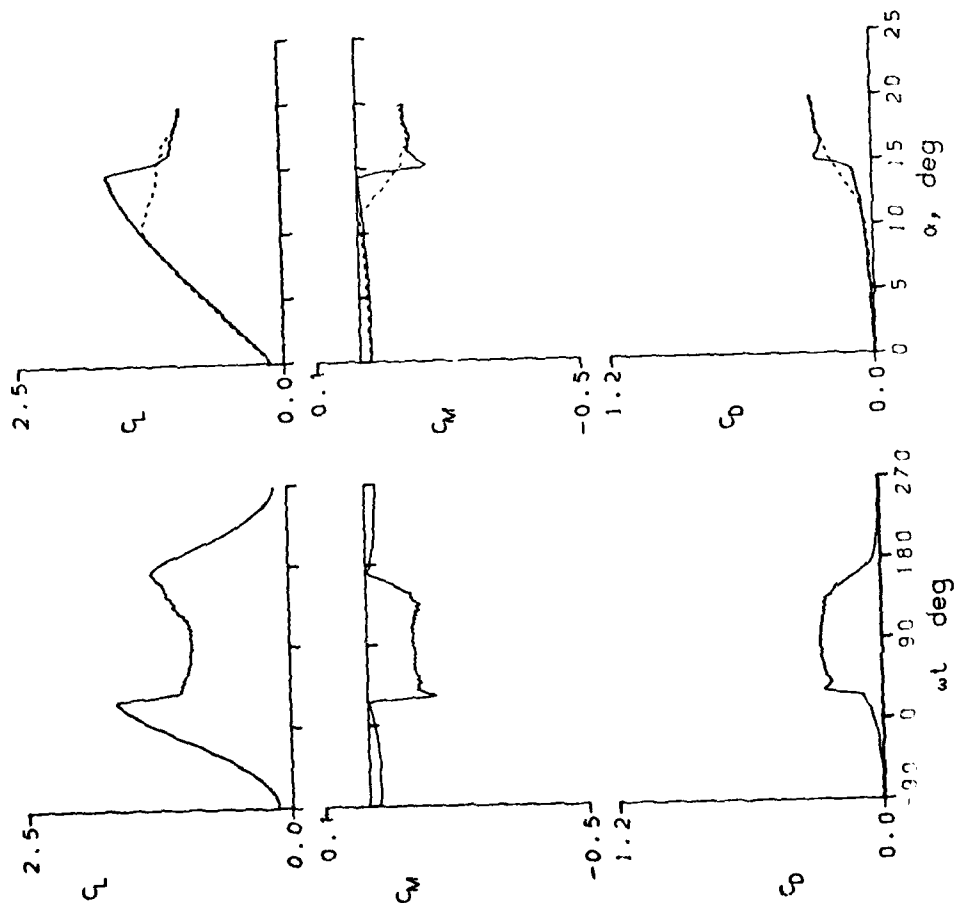


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 39021 $A_0 = 4.05^\circ$ $k = 0.010$
 $Re = 3.81 \times 10^6$ $A_1 = 10.08^\circ$ $M = 0.300$
 $C_{Lmax} = 1.58$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.20$
 $\alpha_{Lmax} = 13.5^\circ$ $\xi = -0.018$ $M_{max} = 1.161$
 $\alpha_{Cmin} = 3.5^\circ$ $-C_{Dmax} = 8.6$ $\alpha_{Mmax} = 13.5^\circ$

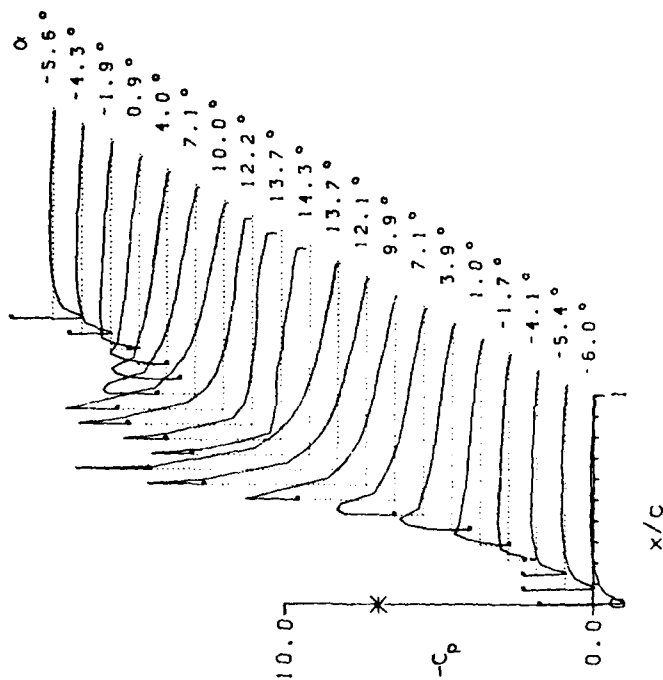
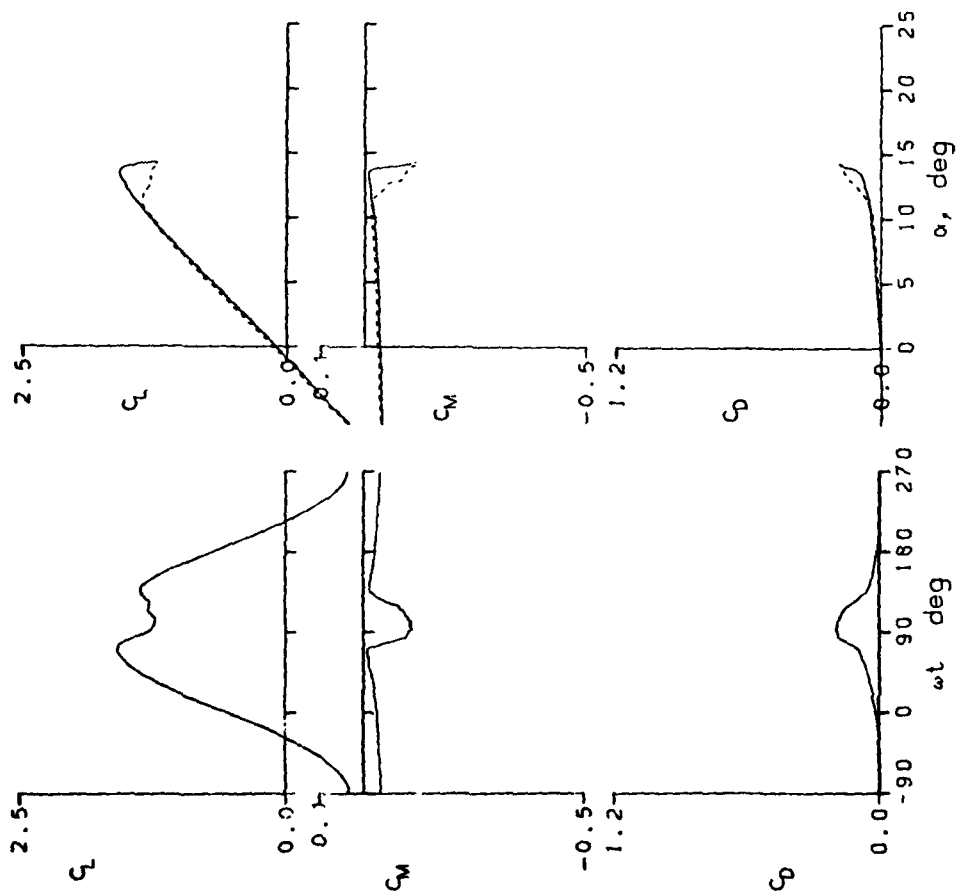


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 39104 $A_0 = 14.96^\circ$ $k = 0.010$
 $Re = 3.93 \text{ E}6$ $A_1 = 4.89^\circ$ $M = 0.297$
 $C_{L_{max}} = 1.65$ $C_{M_{min}} = -0.16$ $C_{D_{max}} = 0.29$
 $\alpha_{L_{max}} = 14.5^\circ$ $\alpha_{C_{L_{min}}} = -0.197$ $M_{max} = 1.230$
 $\alpha_{C_{M_{min}}} = 14.8^\circ$ $-C_{D_{min}} = 9.4$ $\alpha_{M_{max}} = 14.2^\circ$

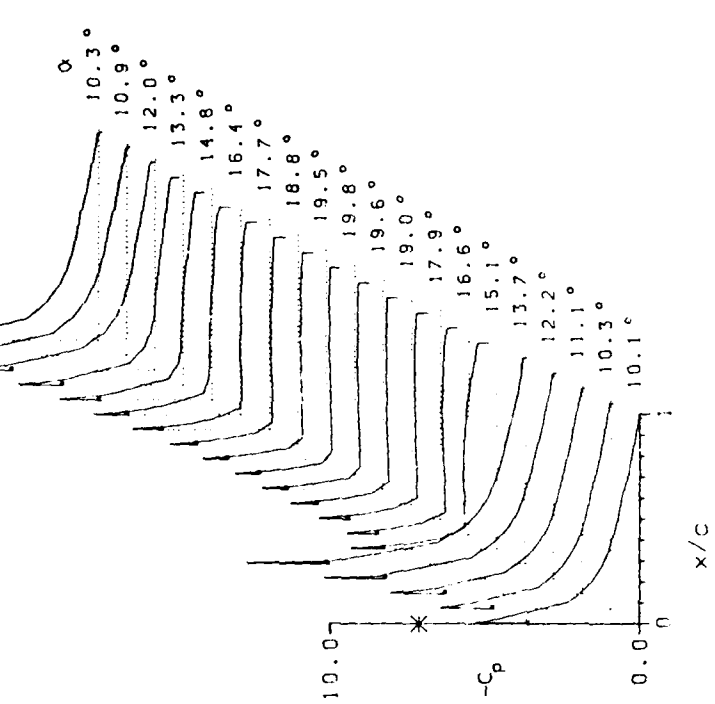
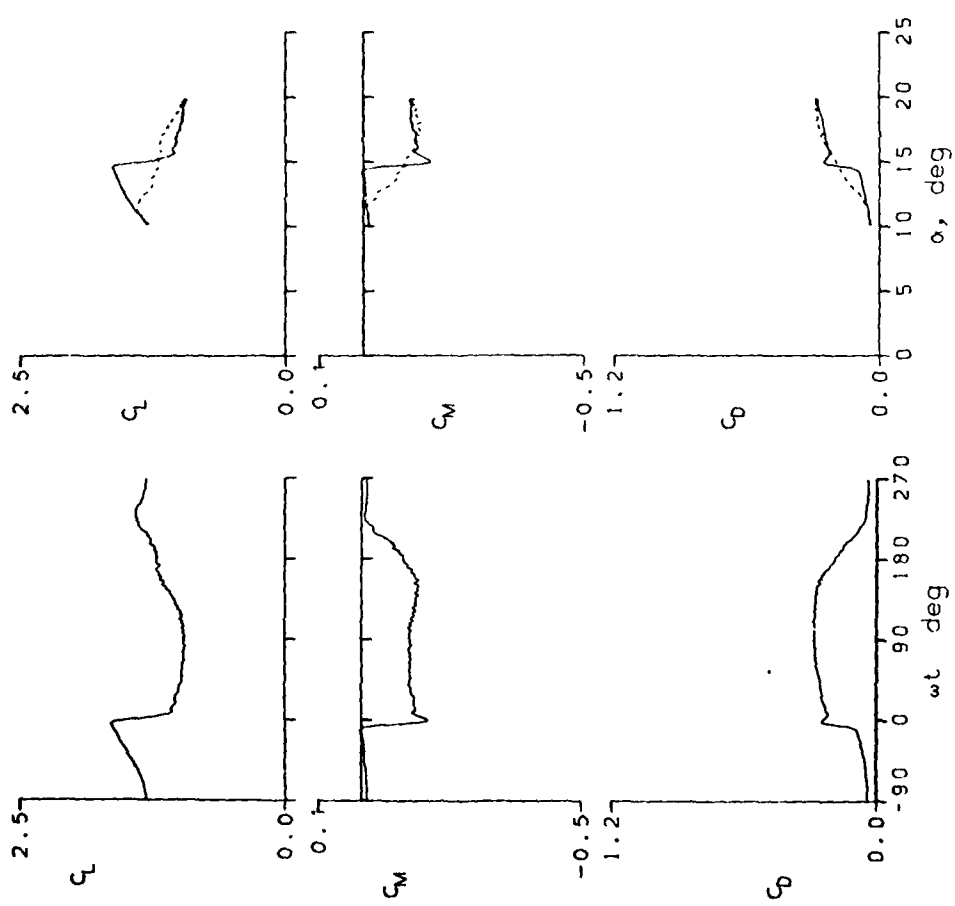


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 39107 $A_0 = 9.94^\circ$ $k = 0.010$
 $Re = 3.94 \times 10^6$ $A_1 = 4.91^\circ$ $M = 0.300$
 $C_{Lmax} = 1.62$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.22$
 $\alpha_{Lmax} = 14.1^\circ$ $\xi = -0.244$ $M_{max} = 1.232$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Pmax} = 9.2$ $\alpha_{Mmax} = 14.1^\circ$

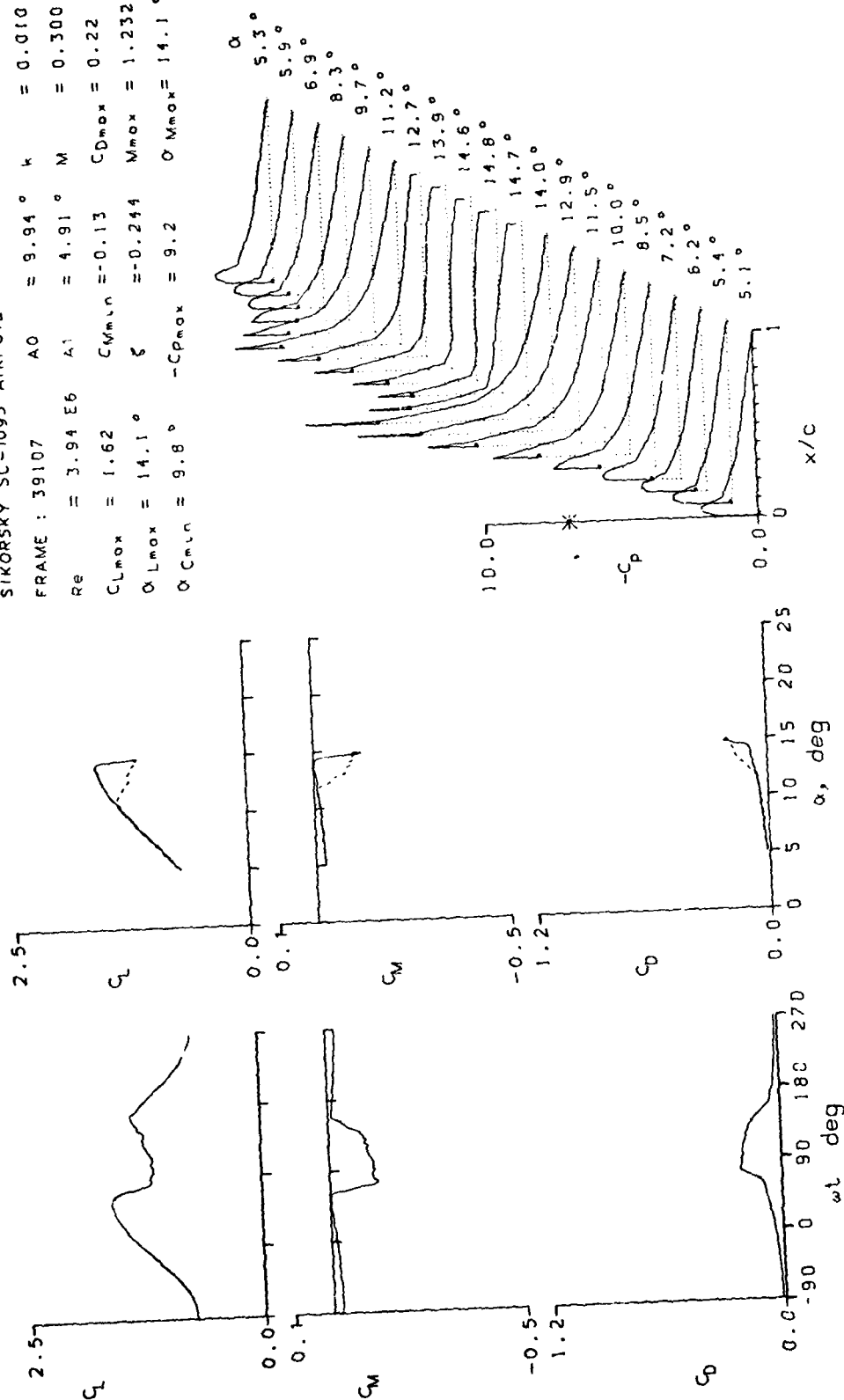


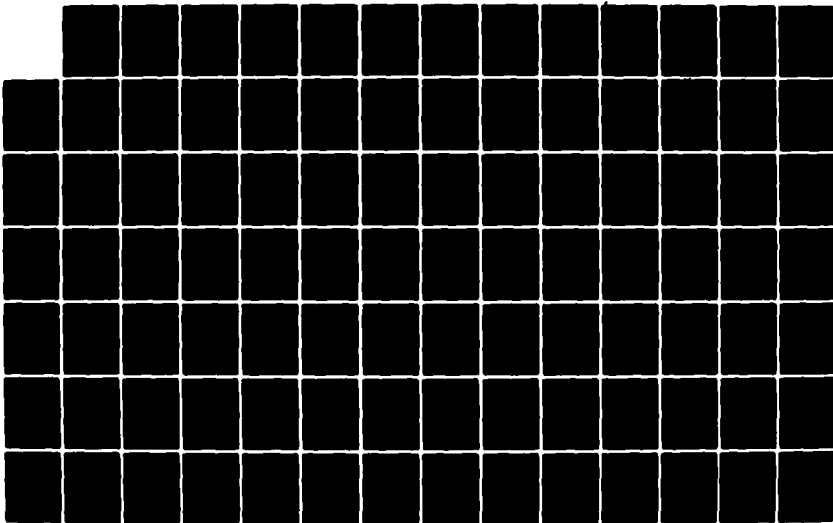
Figure 15.- Continued.

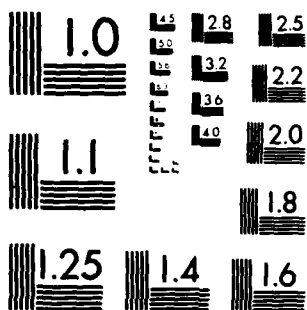
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SIKORSKY SC-1095 AIRFOIL
 FRAME : 391110 $A_0 = 10.90^\circ$ $k = 0.010$
 $Re = 3.90 \text{ E}6$ $A_1 = 4.92^\circ$ $M = 0.299$
 $C_{Lmax} = 1.60$ $C_{Mmin} = -0.14$ $C_{Dmax} = 0.24$
 $\alpha_{Lmax} = 14.4^\circ$ $\xi = -0.196$ $M_{max} = 1.210$
 $\alpha_{Cmin} = 10.7^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 14.0^\circ$

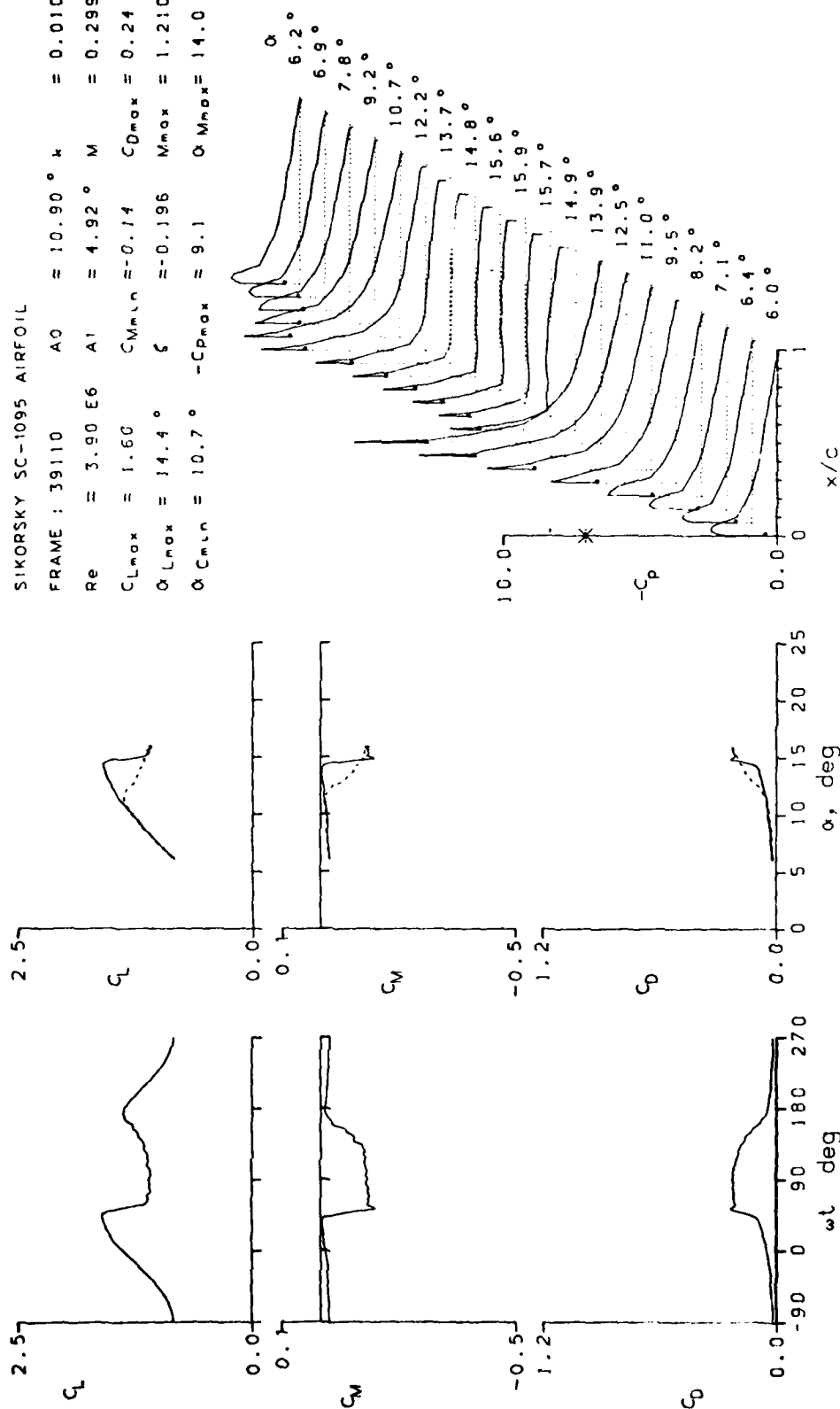


Figure 15.- Continued.

SIKORSKY SC-1095 AIRFOIL
 FRAME : 39115 $A_0 = 14.02^\circ$ $k = 0.010$
 $Re = 3.84 \text{ E}6$ $A_1 = 1.99^\circ$ $M = 0.298$
 $C_{Lmax} = 1.58$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.23$
 $\alpha_{Lmax} = 13.8^\circ$ $\xi = -1.160$ $M_{max} = 1.184$
 $\alpha_{Cmin} = 14.0^\circ$ $-C_{Dpeak} = 8.9$ $\alpha_{Mmax} = 13.7^\circ$

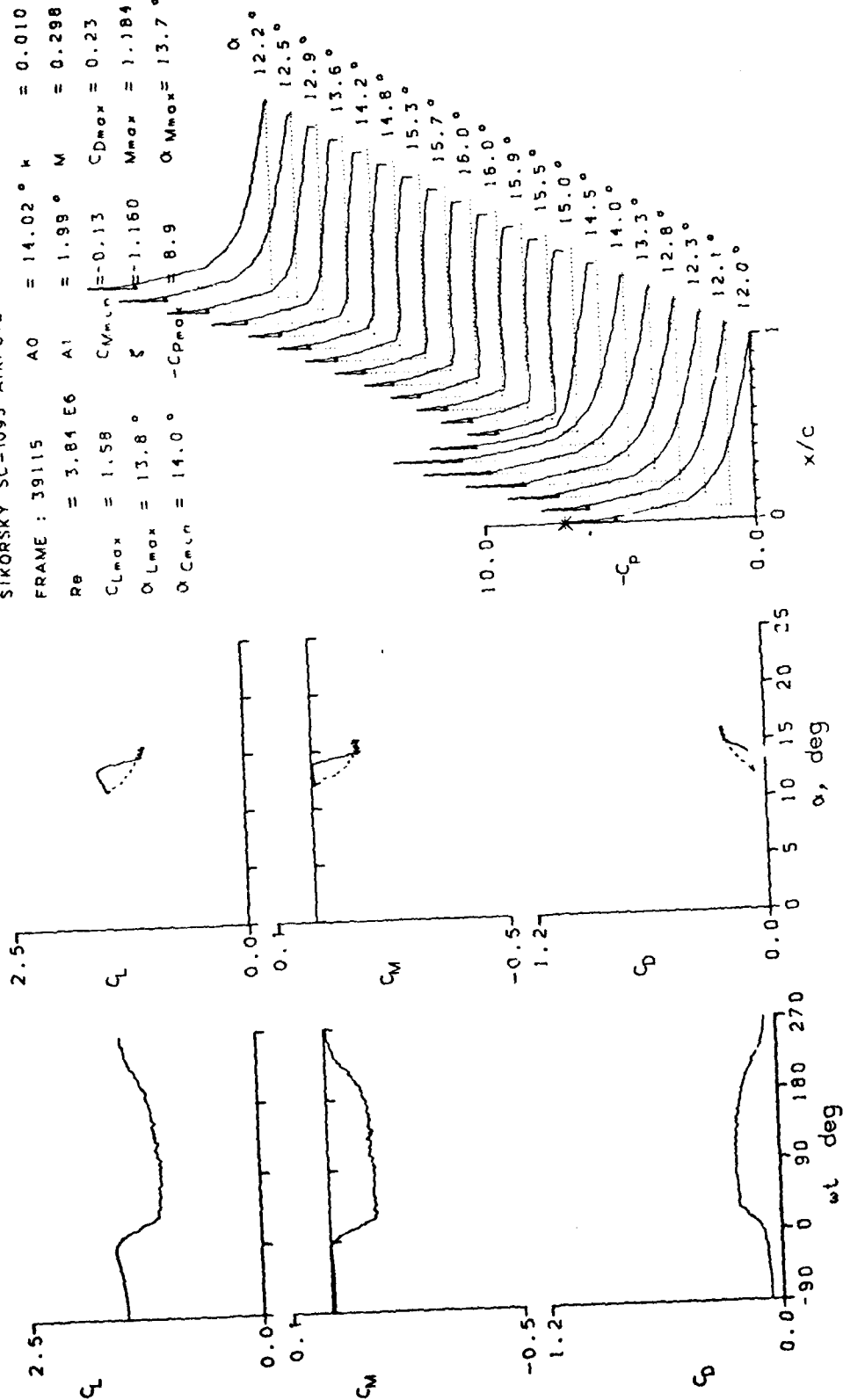


Figure 15.- Concluded.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 42019 $A_0 = 14.89^\circ$ $k = 0.025$

$Re = 3.35 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.292$

$C_{Lmax} = 1.72$ $C_{Mmin} = -0.21$ $C_{Dmax} = 0.49$

$\alpha_{Lmax} = 15.4^\circ$ $\xi = 0.164$ $M_{max} = 1.003$

$\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 7.4$ $\alpha_{Mmax} = 13.3^\circ$

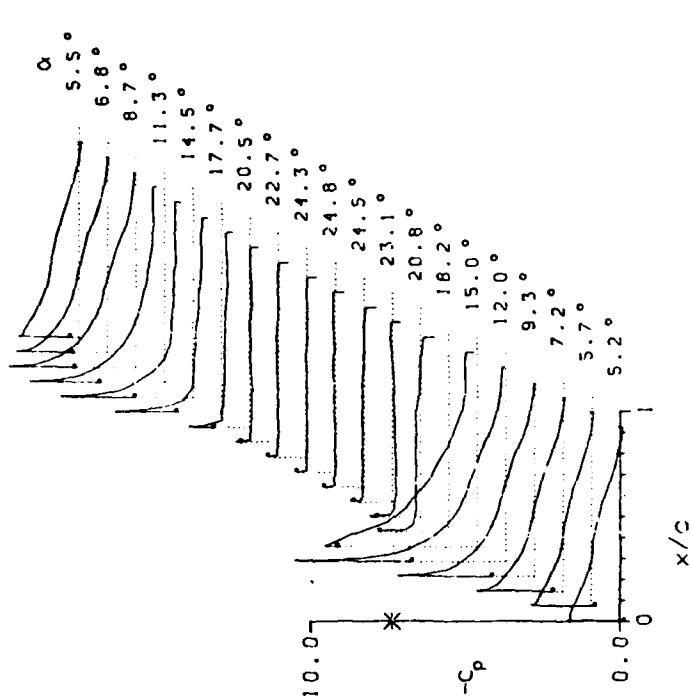
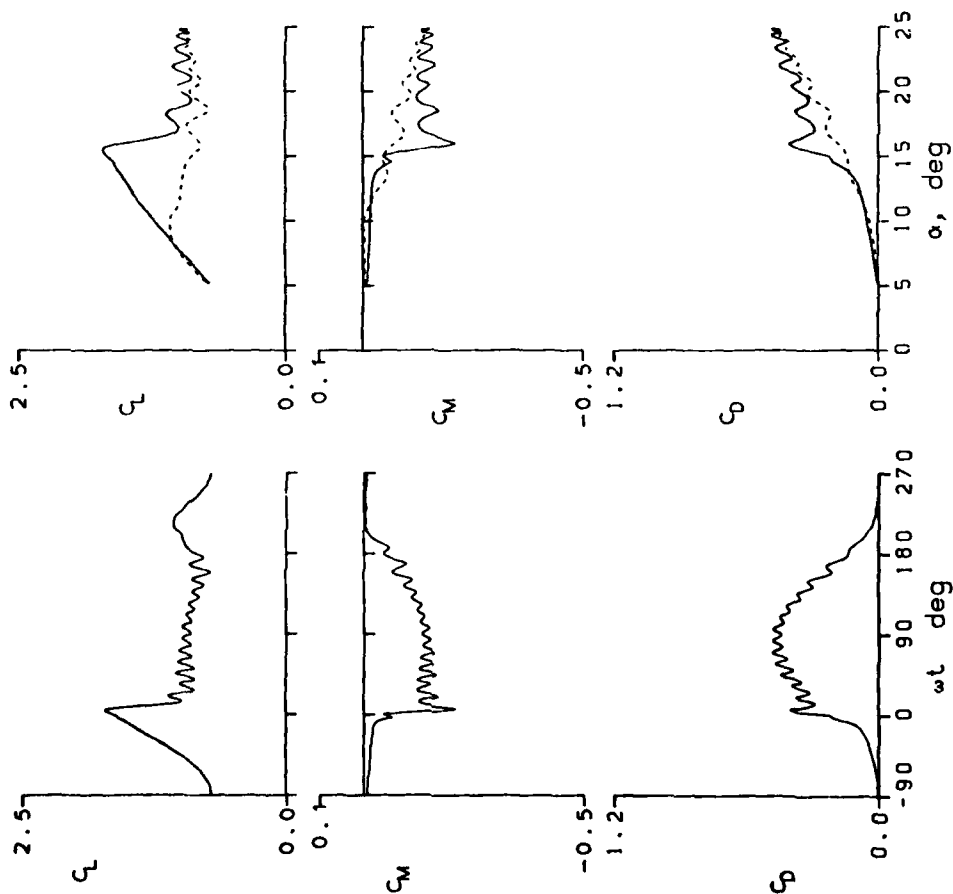


Figure 16.- Dynamic data for Hughes HH-02 airfoil.

HUGHES HH-02 - WITH TAB- AIRFOIL

FRAME : 43021	AO = 14.85°	k = 0.051
Re = 3.88 E6	A1 = 9.99°	M = 0.289
C _{Lmax} = 1.99	C _{Mmin} = -0.30	C _{Dmax} = 0.59
α _{Lmax} = 17.5°	ξ = 0.365	M _{max} = 1.049
α _{Cmin} = 4.5°	-C _{Dmax} = 9.1	α _{Mmax} = 14.5°

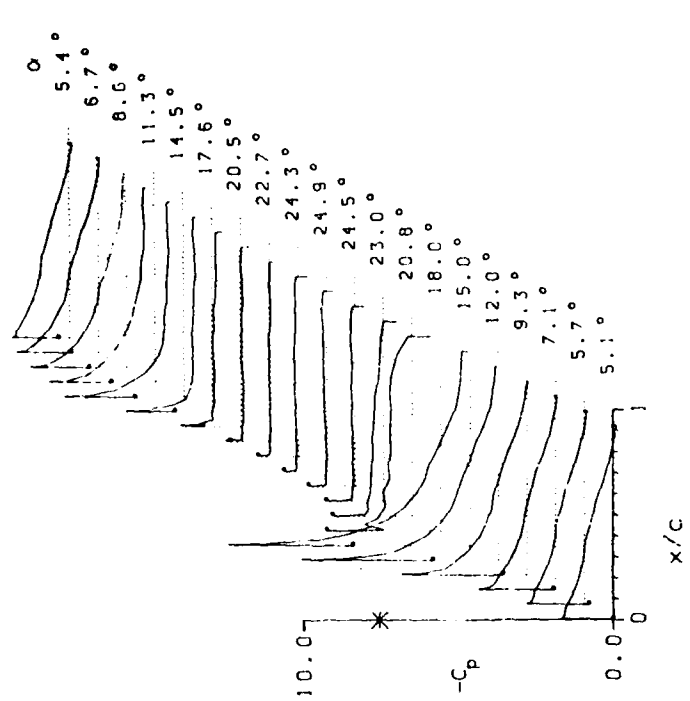
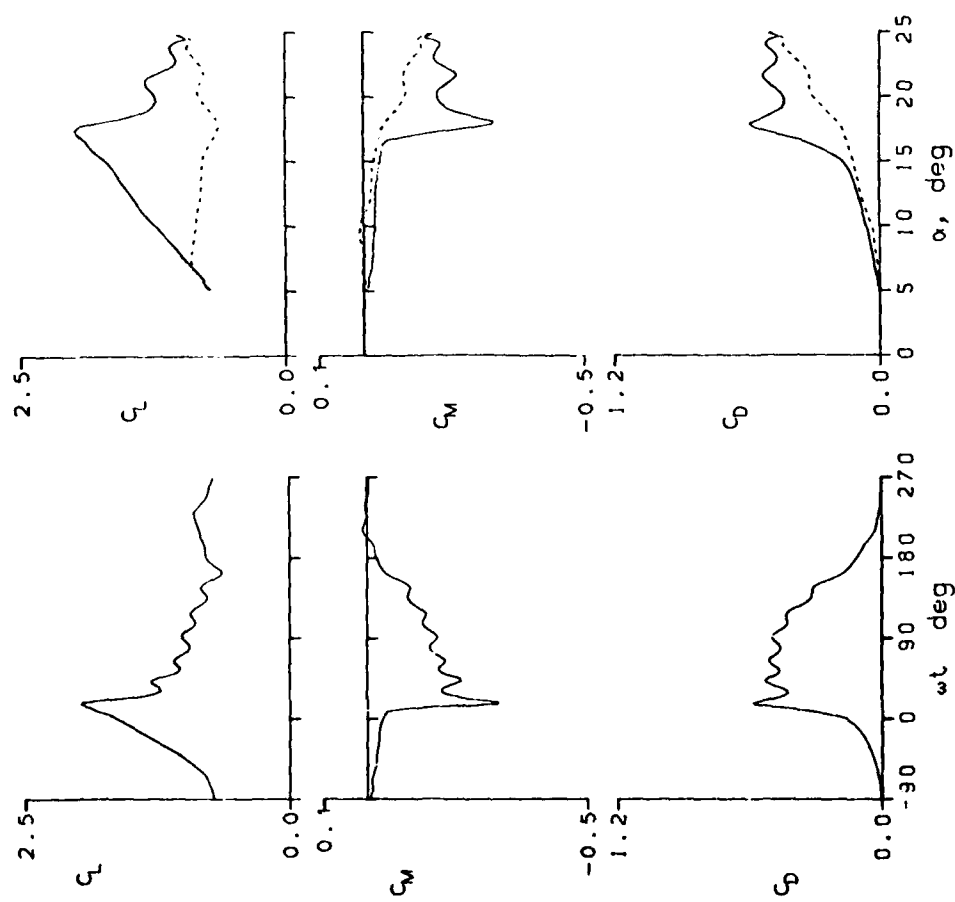


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL TRIP

FRAME : 42100 $A_0 = 14.83^\circ$ $\mu = 0.104$

$Re = 3.79 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.283$

$C_{Lmax} = 2.25$ $C_{Mmin} = -0.42$ $C_{Dmax} = 0.86$

$\alpha_{Lmax} = 20.5^\circ$ $\xi = 0.521$ $M_{max} = 1.084$

$\alpha_{Cmin} = 14.6^\circ$ $-C_{pmax} = 8.8$ $\alpha_{Mmax} = 15.9^\circ$

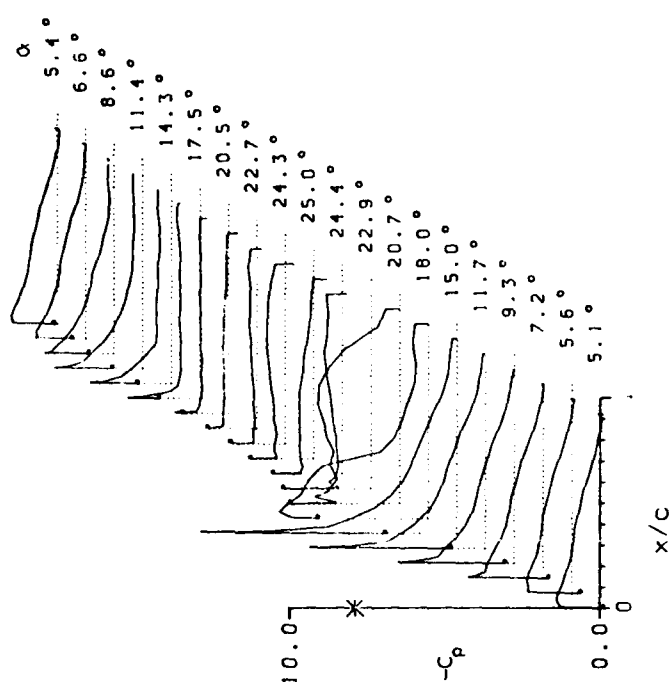
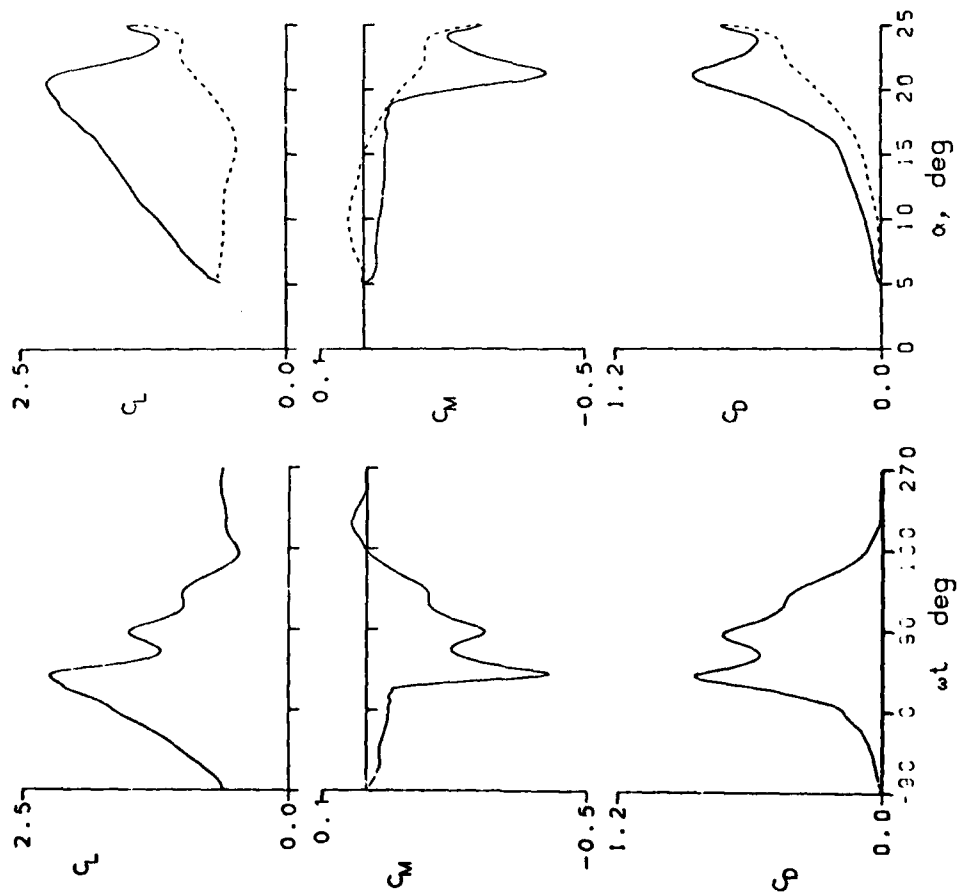


Figure 16.- Continued.

HUGHES HU-02 -WITH TAB- AIRFOIL

FRAME : 42108	A0 = 14.83°	k = 0.051	TRIP
Re = 2.53 E6	A1 = 9.89°	M = 0.183	
C _{Lmax} = 2.07	C _{Mmin} = -0.31	C _{Dmax} = 0.67	
α _{Lmax} = 13.2°	ξ = 0.485	M _{max} = 0.699	
α _{Cmin} = 14.5°	-C _{Dmax} = 11.2	α _{Mmax} = 18.0°	

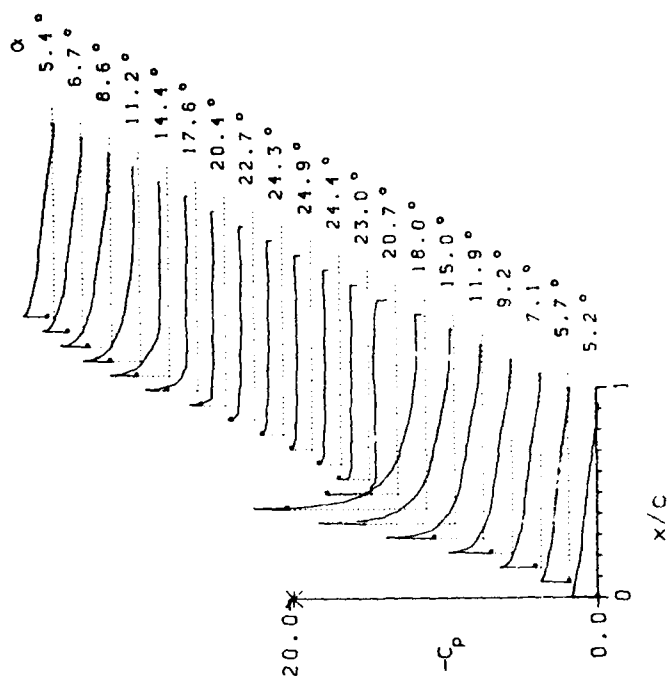
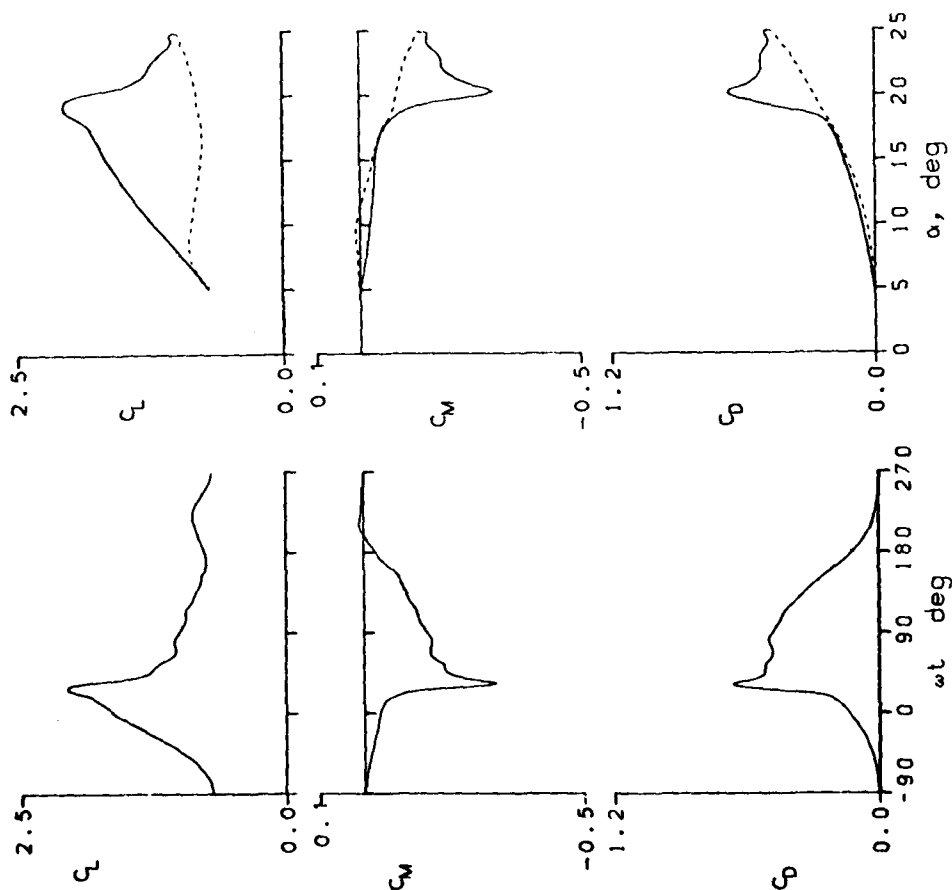


Figure 16.- Continued.

HUGHES HR-02 - WITH TAB - AIRFOIL

FRAME : 42110	A0 = 14.82°	k = 0.101	TRIP
Re = 2.53 E6	A1 = 9.91°	M = 0.183	
C _{Lmax} = 2.39	C _{Mmin} = -0.40	C _{Dmax} = 0.91	
α _{Lmax} = 20.8°	ξ = 0.404	Mmax = 0.713	
α _{Cmin} = 14.5°	-C _{pmax} = 11.6	α _{Mmax} = 18.9°	

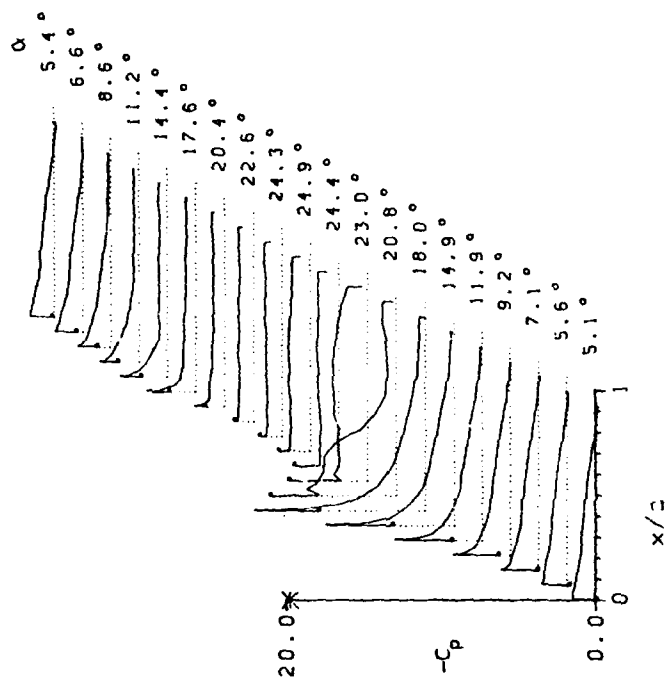
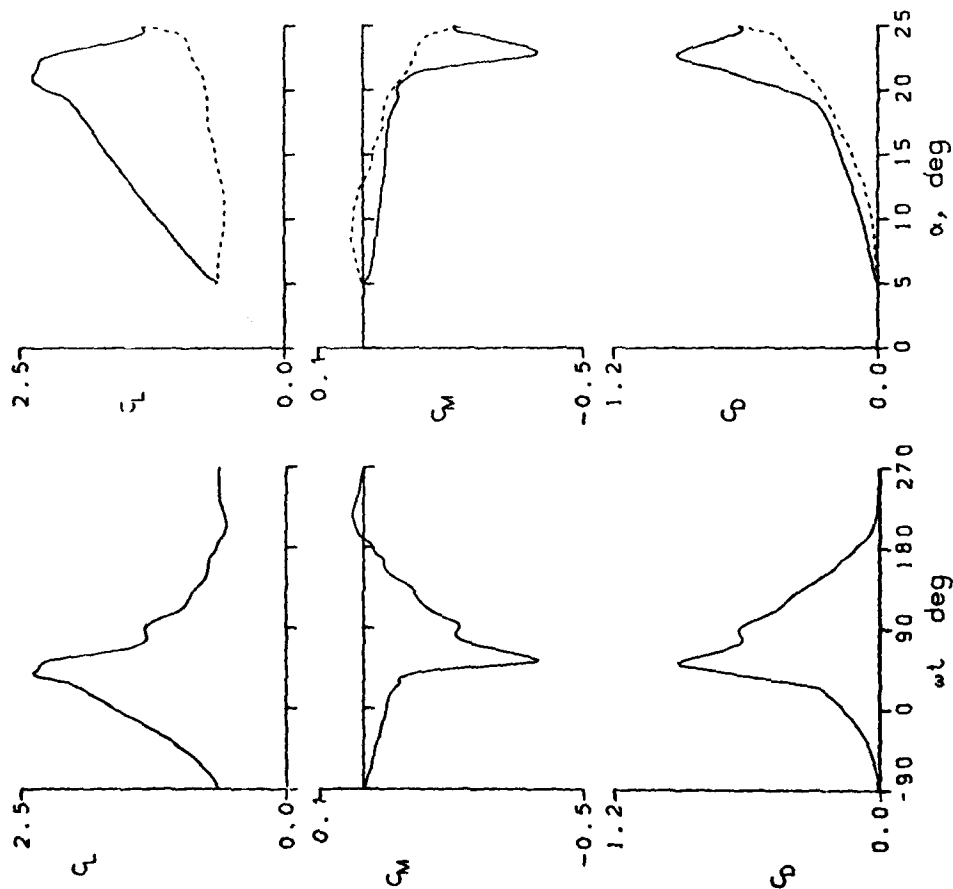


Figure 16.- Continued.

HUGHES HM-02 -WITH TAB- AIRFOIL TRIP
 FRAME : 42113 $A_0 = 14.84^\circ$ $k = 0.152$
 $Re = 2.53 \text{ EE}$ $A_1 = 9.88^\circ$ $M = 0.183$
 $C_{Lmax} = 2.61$ $C_{Mmin} = -0.46$ $C_{Dmax} = 1.09$
 $\alpha_{Lmax} = 22.4^\circ$ $\xi = 0.286$ $M_{max} = 0.724$
 $\alpha_{Cmin} = 14.5^\circ$ $-C_{Dmax} = 11.9$ $\alpha_{Mmax} = 19.5^\circ$

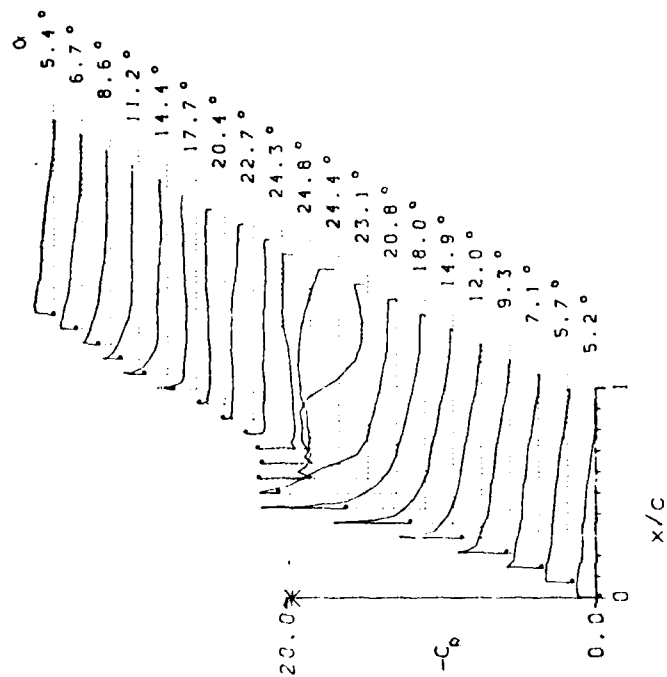
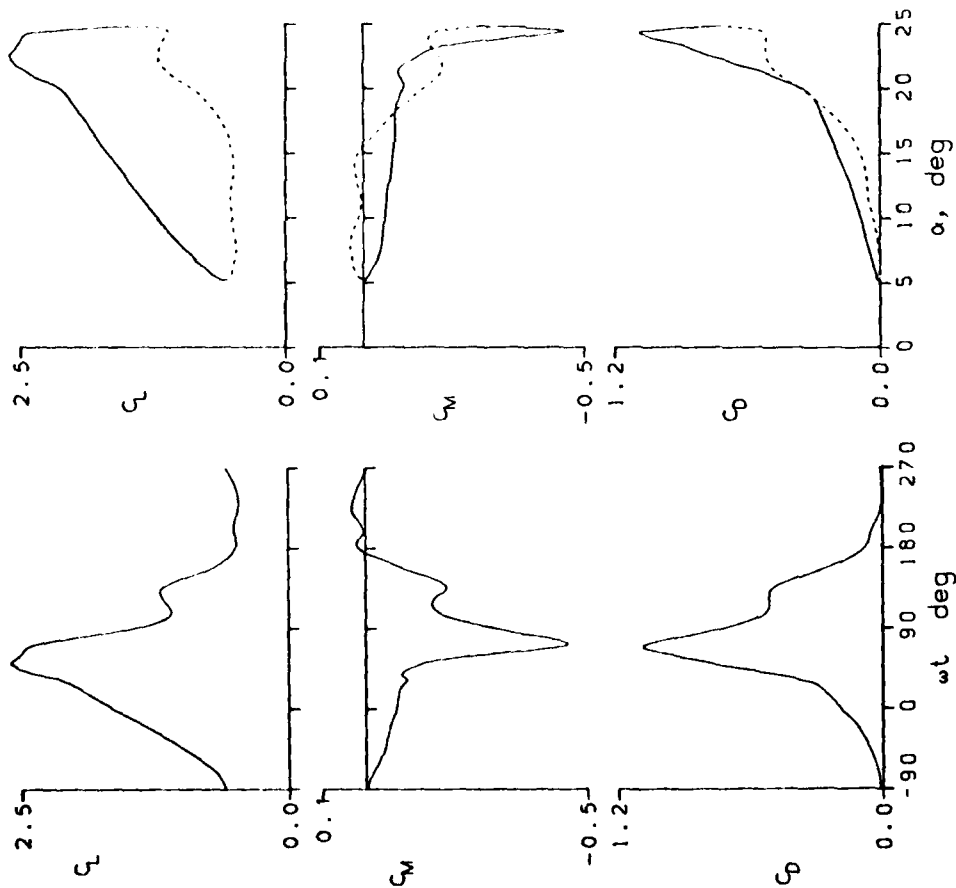


Figure 16.- Continued.

HUGHES MH-02 - WITH TAB - AIRFOIL

FRAME : 42121 $A_0 = 14.82^\circ$ $k = 0.101$

$Re = 1.03 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.072$

$C_{Lmax} = 2.47$ $C_{Mmin} = -0.43$ $C_{Dmax} = 1.03$

$\alpha_{Lmax} = 22.8^\circ$ $\xi = 0.389$ $M_{max} = 0.312$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 16.9$ $\alpha_{Mmax} = 21.3^\circ$

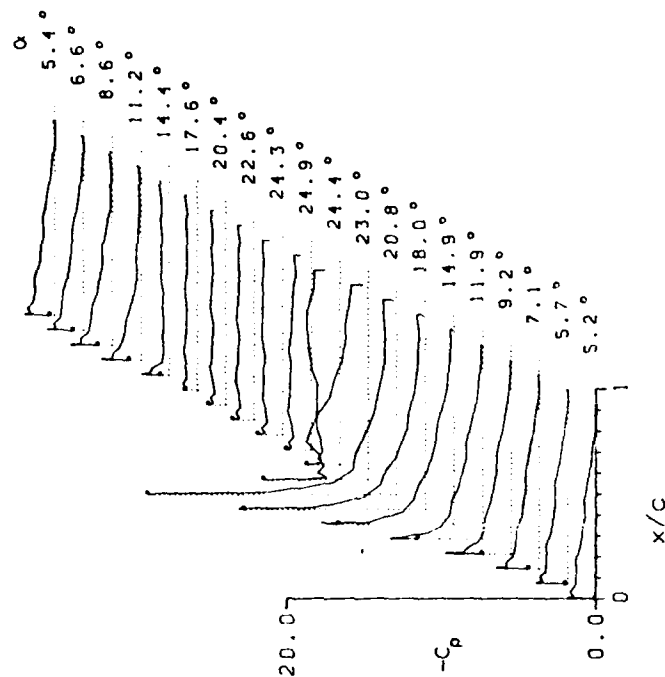
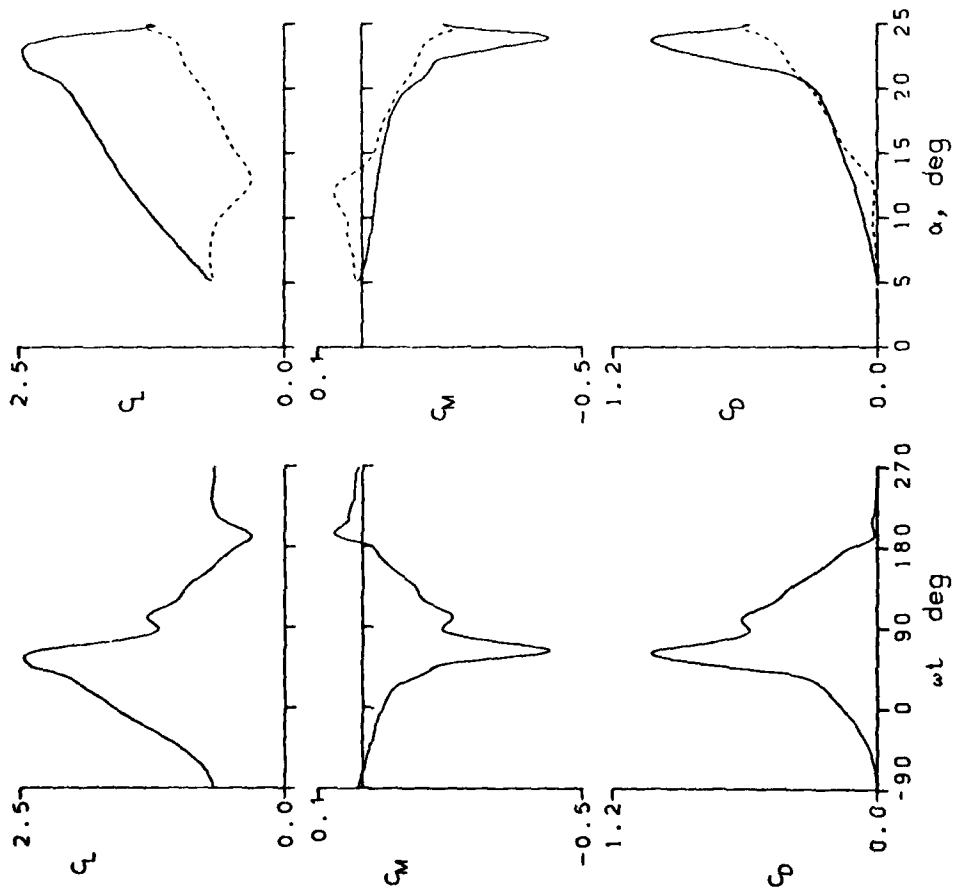


Figure 16.- Continued.

HUGHES 44-02 - WITH TAB - AIRFOIL
 FRAME : 42206 $A_0 = 14.89^\circ$ $\mu = 0.026$
 $Re = 3.98 \text{ E}6$ $A_1 = 9.89^\circ$ $M = 0.290$
 $C_{Lmax} = 1.77$ $C_{Mmin} = -0.21$ $C_{Dmax} = 0.46$
 $\alpha_{Lmax} = 16.0^\circ$ $\xi = 0.187$ $M_{max} = 1.172$
 $\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 13.9^\circ$

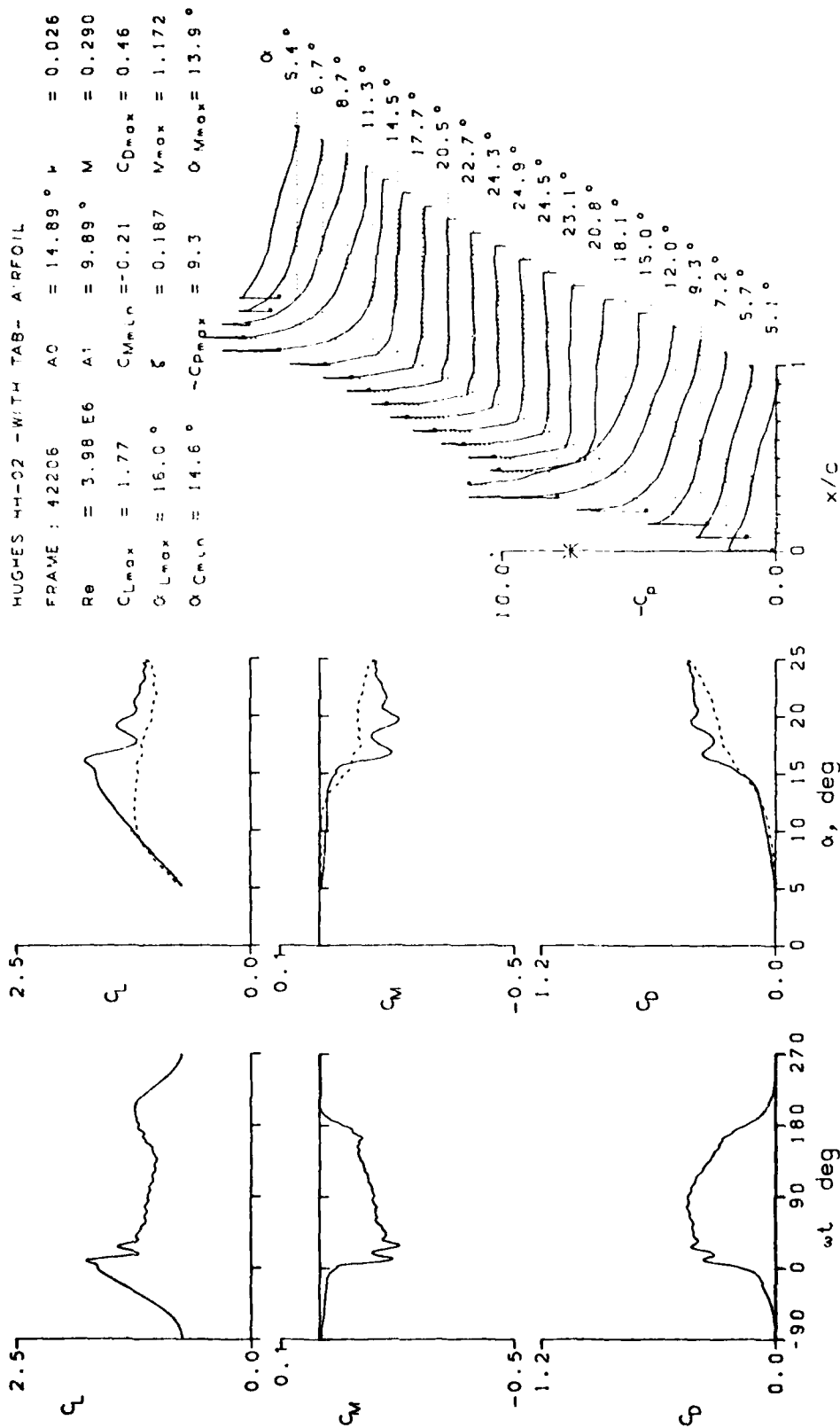


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRAME : 42208	$A_0 = 14.85^\circ$	$k = 0.051$
$Re = 3.98 E6$	$A_1 = 9.89^\circ$	$M = 0.292$
$C_{Lmax} = 1.95$	$C_{Mmin} = -0.25$	$C_{Dmax} = 0.49$
$\alpha_{Lmax} = 17.5^\circ$	$\xi = 0.289$	$M_{max} = 1.169$
$\alpha_{Cmin} = 14.5^\circ$	$-C_{Dmax} = 9.2$	$\alpha_{Mmax} = 14.2^\circ$

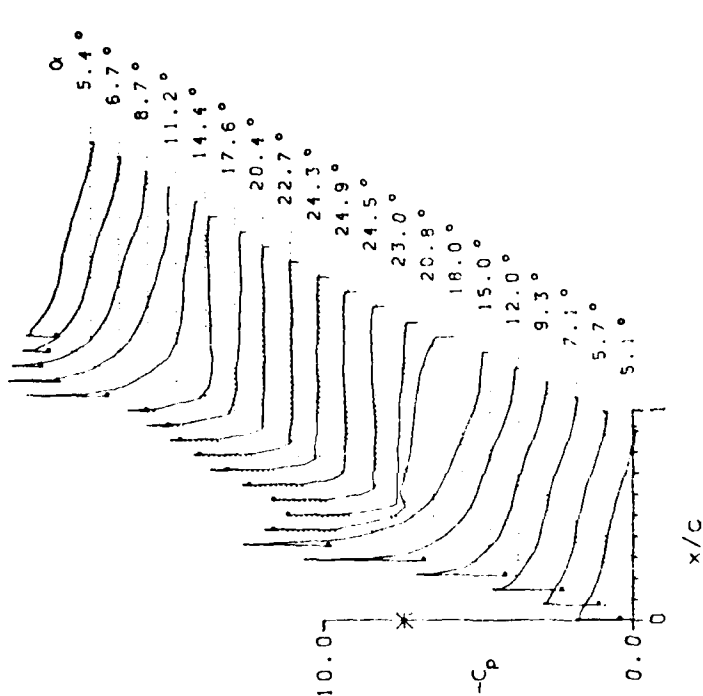
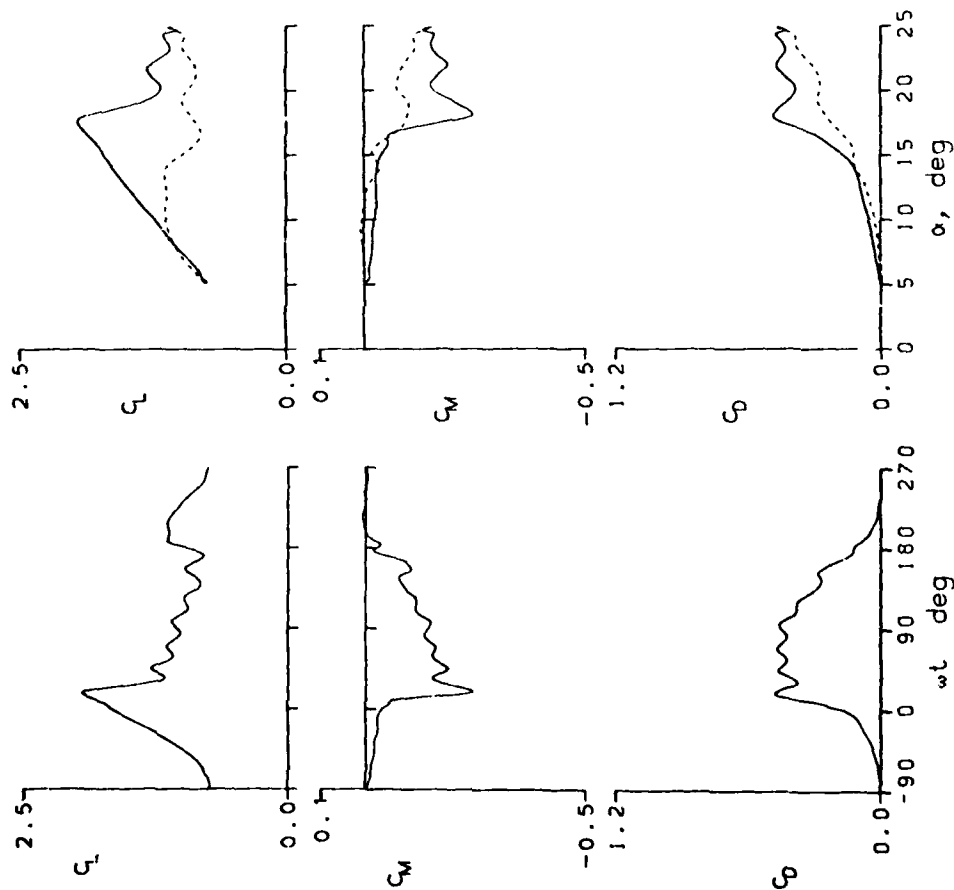


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRAME : 42208	$A_0 = 14.85^\circ$	$k = 0.051$
$Re = 3.98 \text{ E} 6$	$A_1 = 9.89^\circ$	$M = 0.292$
$C_{Lmax} = 1.96$	$C_{Mmin} = -0.25$	$C_{Dmax} = 0.49$
$\alpha_{Lrov} = 17.5^\circ$	$\xi = 0.289$	$M_{max} = 1.169$
$\alpha_{Cmin} = 14.5^\circ$	$-C_{Dmax} = 9.2$	$\alpha_{Mmax} = 14.2^\circ$

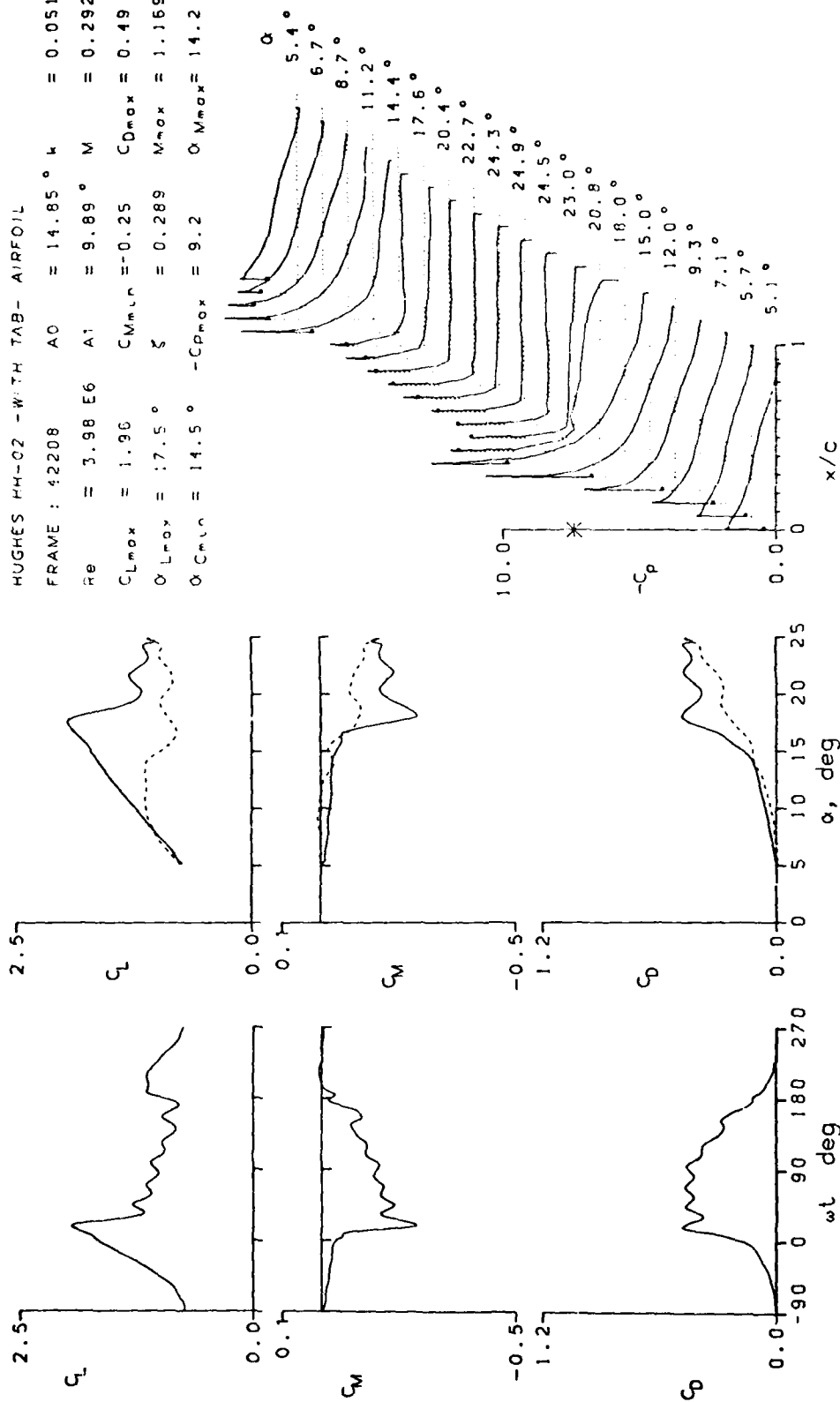


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 42210 $A_0 = 14.83^\circ$ $k = 0.103$

$P_0 = 3.91 \text{ E6}$ $A' = 9.95^\circ$ $V = 0.288$

$C_{Lmax} = 2.25$ $C_{Mmin} = -0.36$ $C_{Dmax} = 0.78$

$\alpha_{Lmax} = 20.3^\circ$ $\xi = 0.543$ $M_{max} = 1.202$

$\alpha_{Cmin} = 14.6^\circ$ $-C_{pmax} = 9.7$ $\alpha_{Mmax} = 15.2^\circ$

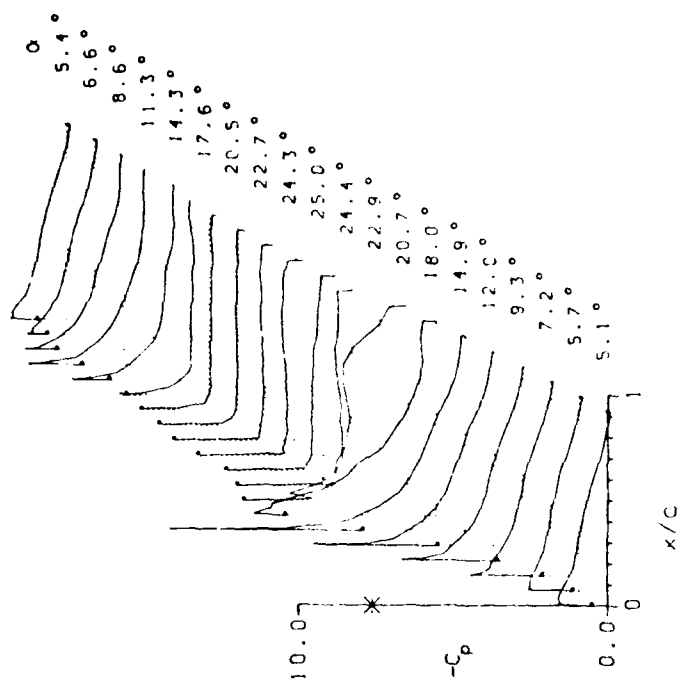
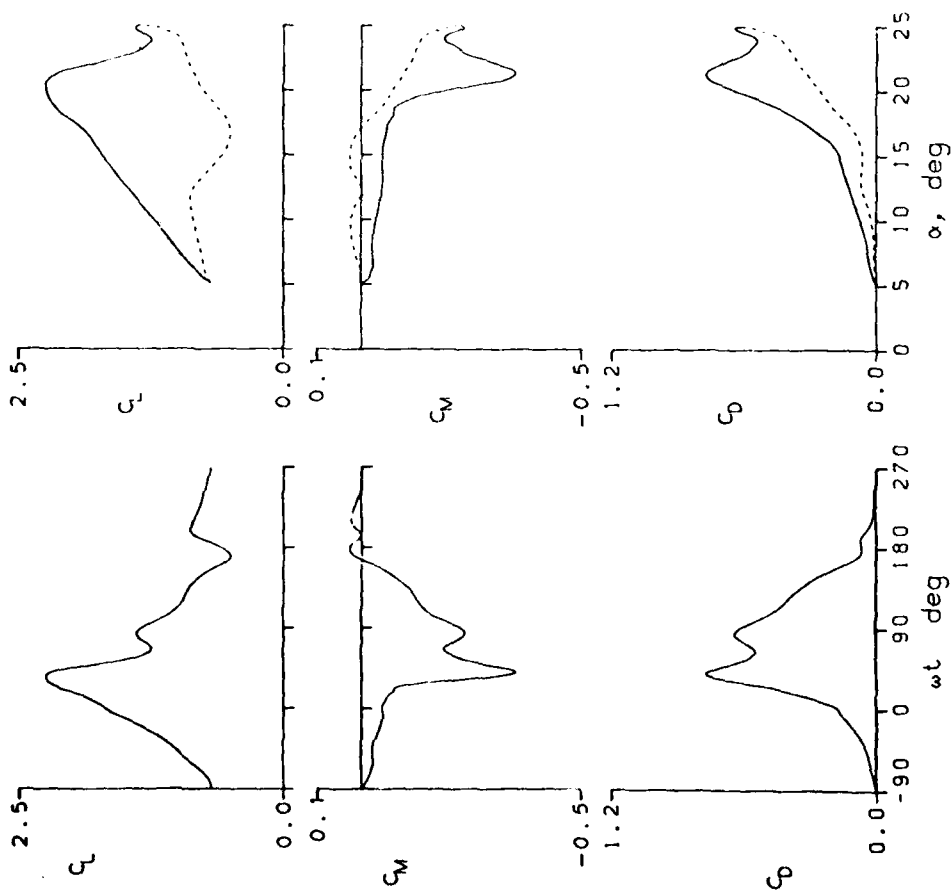


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 42212 $A_0 = 14.90^\circ$ $k = 0.156$
 $Re = 3.83 \text{ E}6$ $A' = 9.87^\circ$ $M = 0.283$
 $C_{Lmax} = 2.37$ $C_{Mmin} = -0.43$ $C_{Dmax} = 0.98$
 $\alpha_{Lmax} = 21.7^\circ$ $\xi = 0.472$ $M_{max} = 1.194$
 $\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 16.6^\circ$

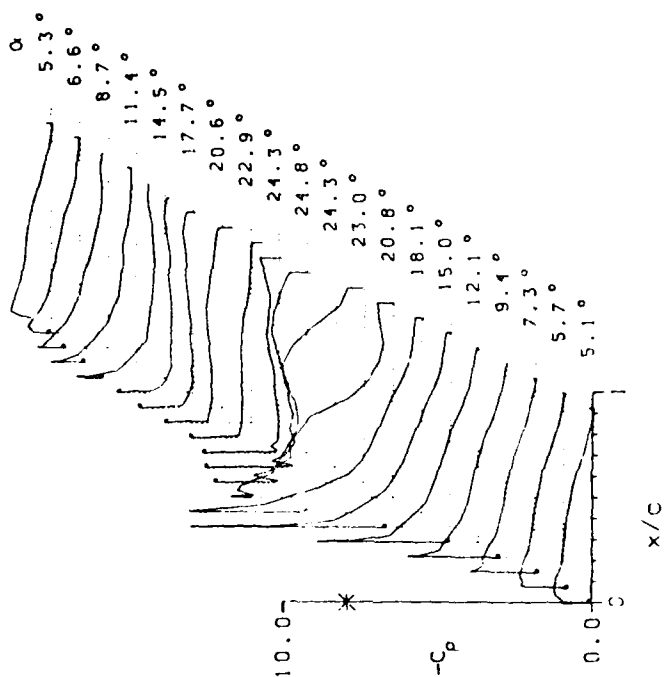
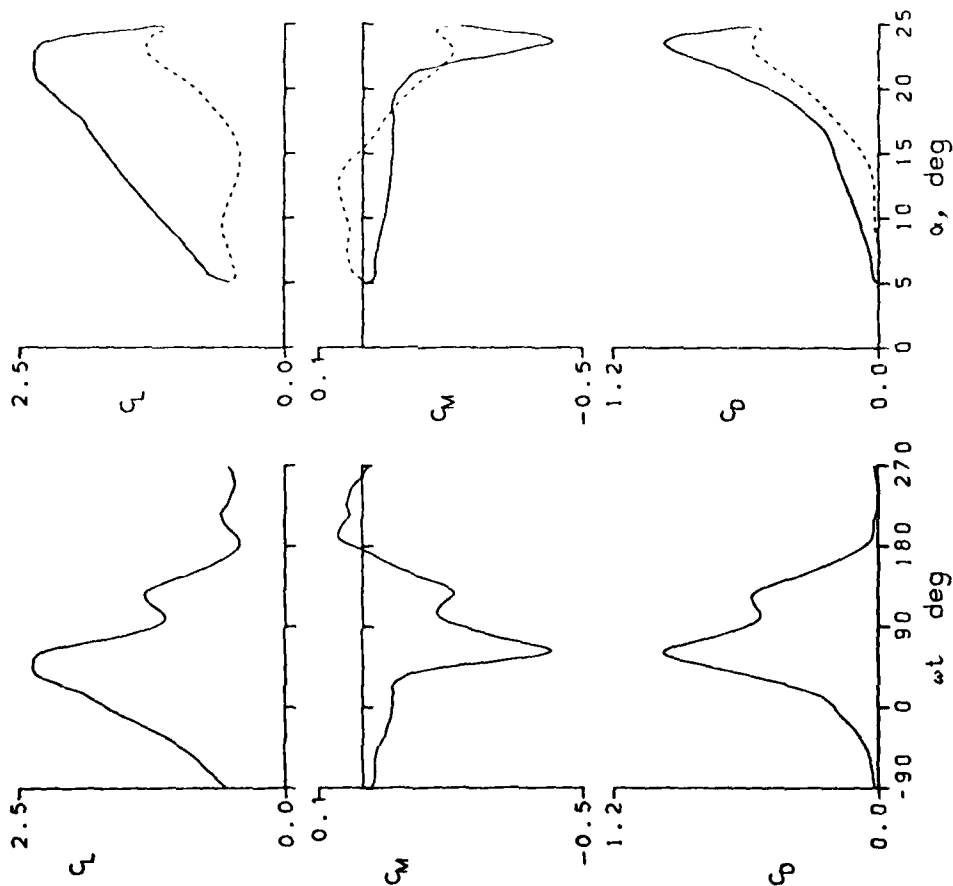


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRANC : 42217 $A_0 = 14.90^\circ$ $k = 0.156$

$Re = 3.83 \text{ E}6$ $A1 = 9.87^\circ$ $M = 0.283$

$C_{Lmax} = 2.37$ $C_{Mmax} = -0.44$ $C_{Dmax} = 0.99$

$\alpha_{Lmax} = 22.0^\circ$ $\xi = 0.466$ $M_{max} = 1.191$

$\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 10.0$ $\alpha_{Mmax} = 16.6^\circ$

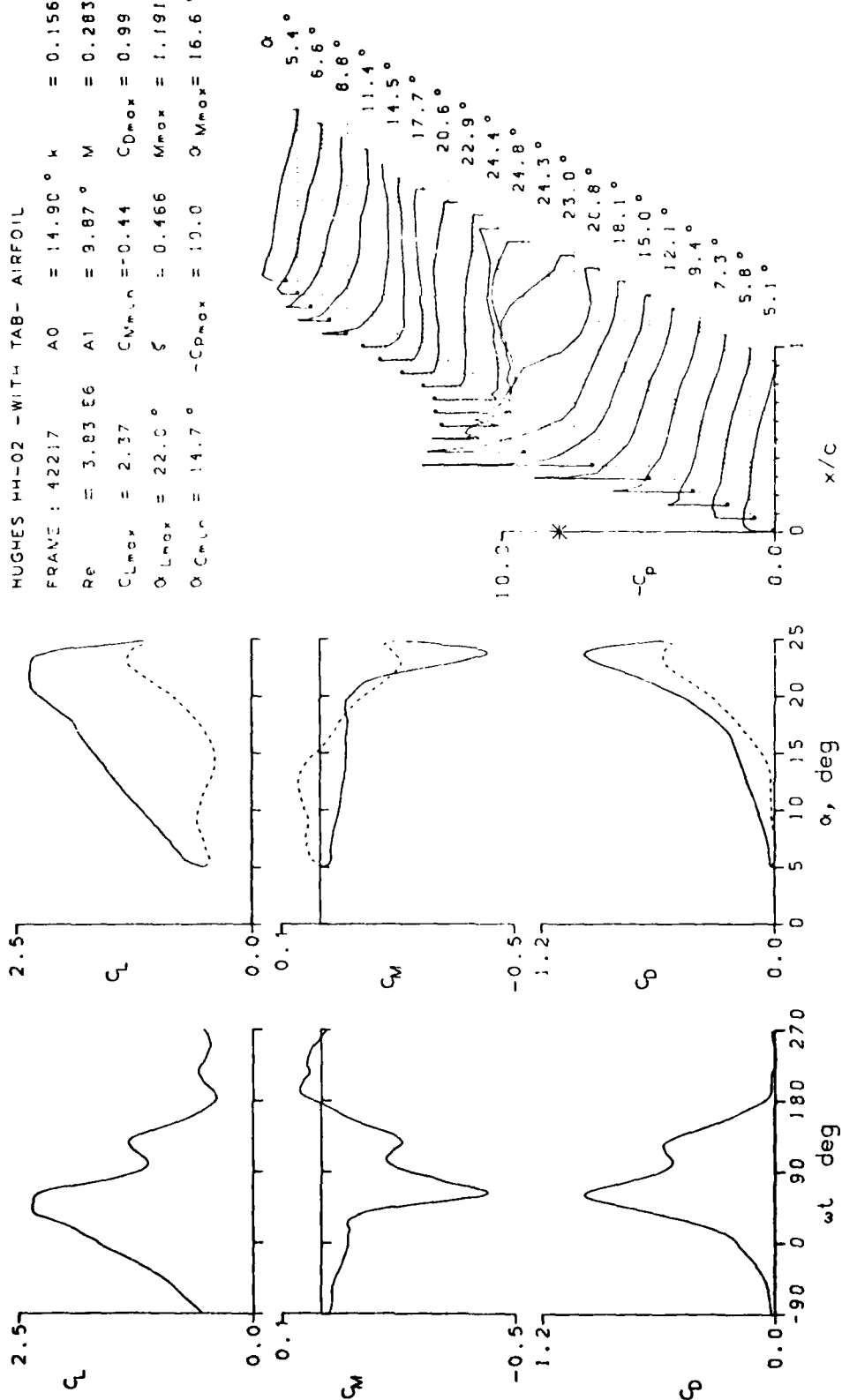


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 42218 $A_0 = 14.85^\circ$ $k = 0.101$
 $Re = 3.76 E6$ $A_1 = 9.87^\circ$ $M = 0.278$
 $C_{Lmax} = 2.28$ $C_{Mmin} = -0.37$ $C_{Dmax} = 0.81$
 $\alpha_{Lmax} = 20.8^\circ$ $\zeta = 0.521$ $M_{max} = 1.181$
 $\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 10.3$ $\alpha_{Mmax} = 15.6^\circ$

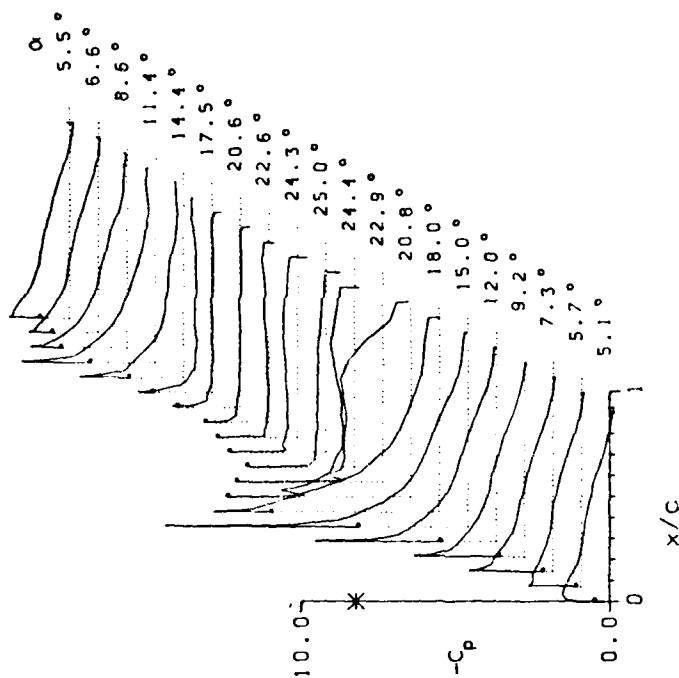
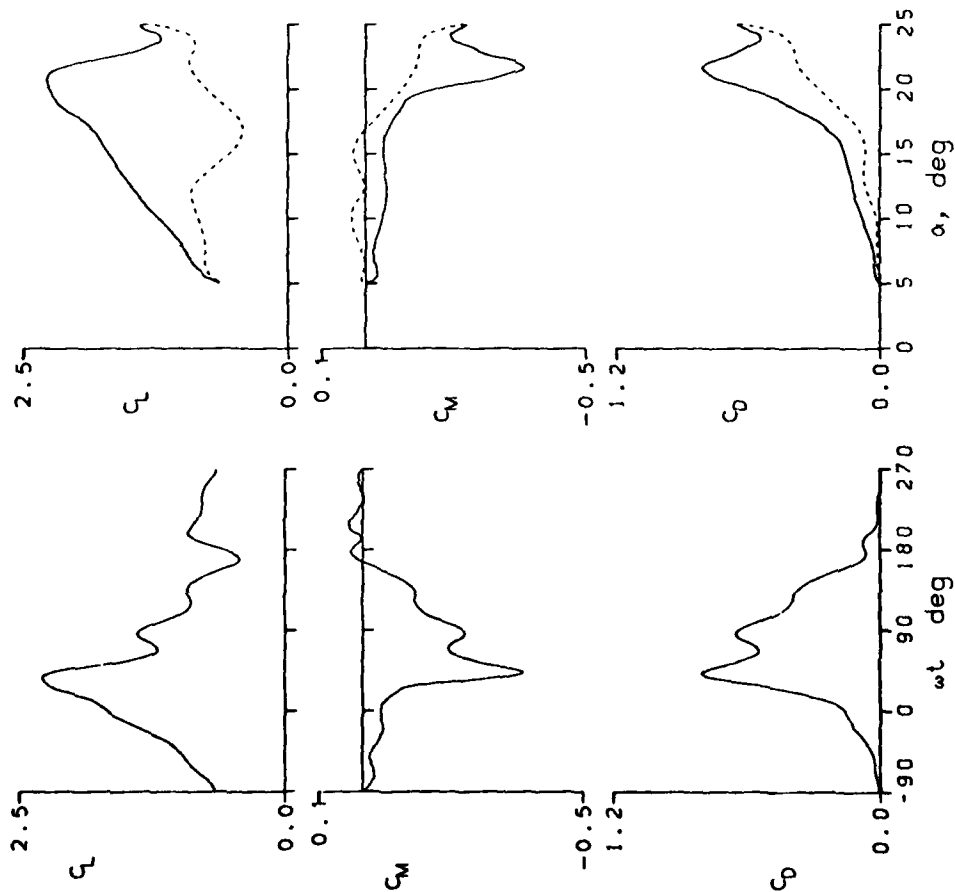


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 42302 A0 = 14.84° μ = 0.101
 Re = 2.53 E6 A1 = 9.89° M = 0.183
 CLmax = 2.55 CMmin = -0.38 CDmax = 0.95
 α_{Lmax} = 22.9° ξ = 0.299 Mmax = 0.902
 α_{CMmin} = 14.5° -CDmax = 16.9 α_{Mmax} = 20.8°

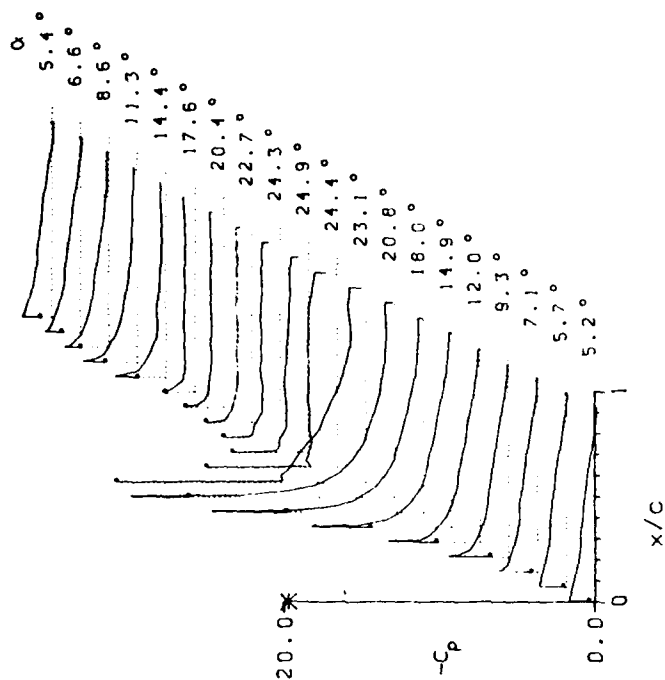
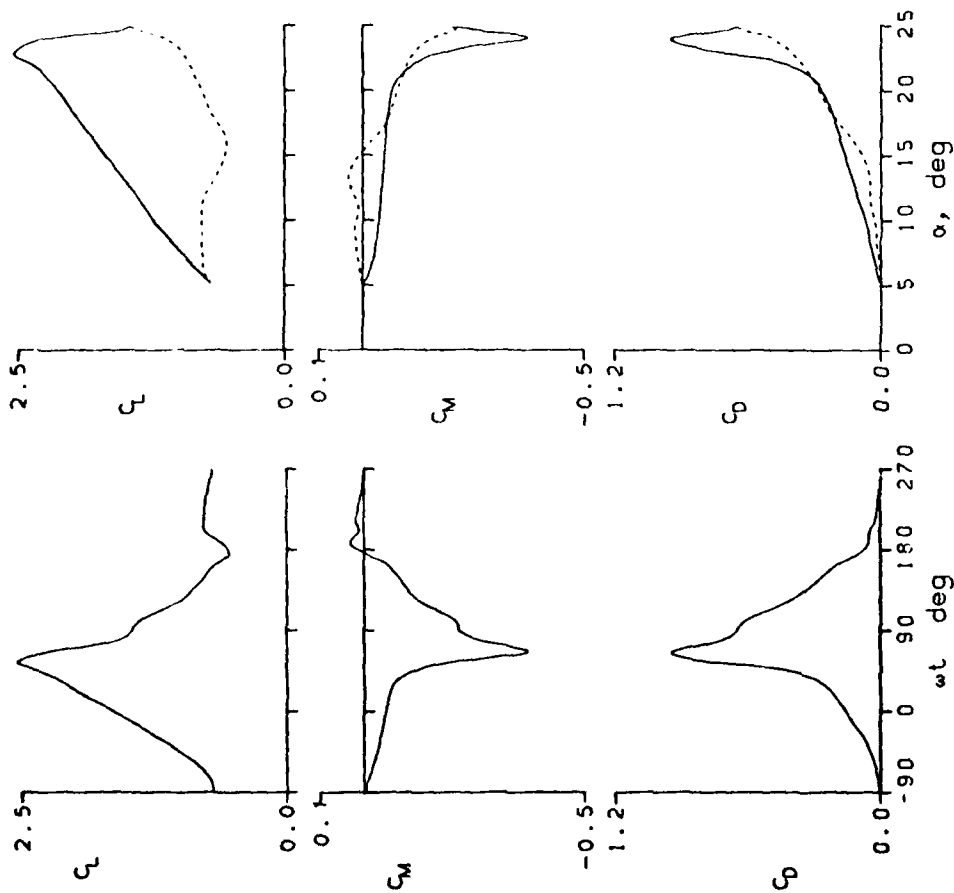


Figure 16.- Continued.

HUGHES HM-02 - WITH TAB - AIRFOIL

FRAME : 42309 $AC = 14.84^\circ$ $k = 0.101$

$Re = 2.98 \times 10^6$ $Al = 9.88^\circ$ $M = 0.218$

$C_{Lmax} = 2.41$ $C_{Mmin} = -0.39$ $C_{Dmax} = 0.92$

$\alpha_{Lmax} = 21.3^\circ$ $\zeta = 0.466$ $M_{max} = 1.083$

$\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 15.3$ $\alpha_{Mmax} = 18.9^\circ$

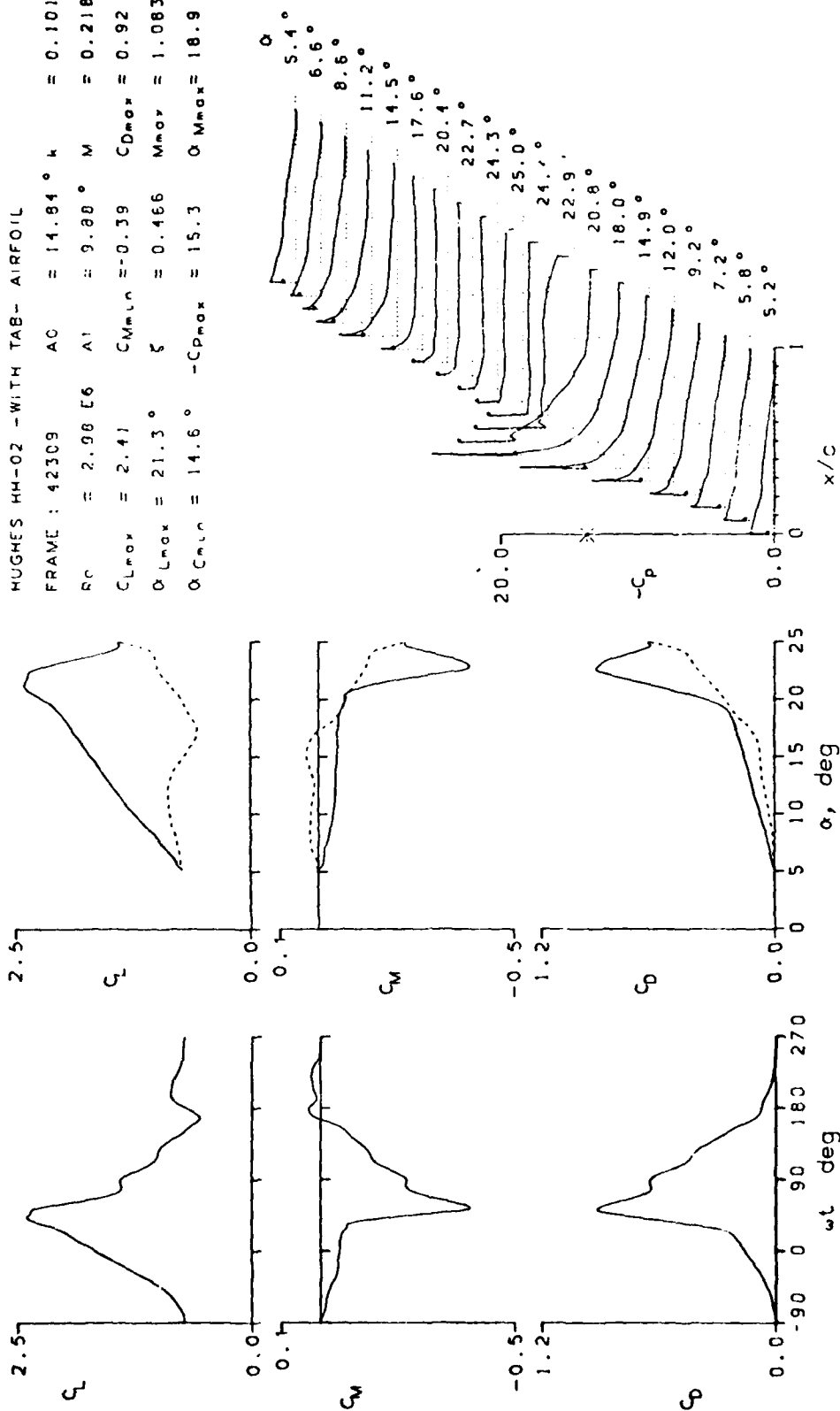


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 42313 $A_0 = 14.86^\circ$ $k = 0.101$

$Re = 3.33 \text{ E}6$ $A_1 = 9.86^\circ$ $M = 0.246$

$C_{Lmax} = 2.30$ $C_{Mmin} = -0.38$ $C_{Dmax} = 0.86$

$\alpha_{Lmax} = 20.1^\circ$ $\xi = 0.487$ $M_{max} = 1.109$

$\alpha_{Cmin} = 14.5^\circ$ $-C_{Dmax} = 12.2$ $\alpha_{Mmax} = 17.5^\circ$

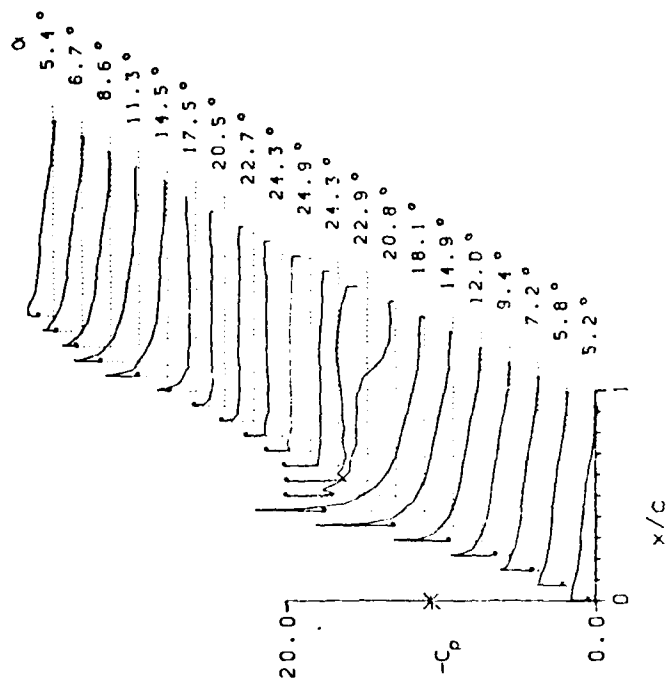
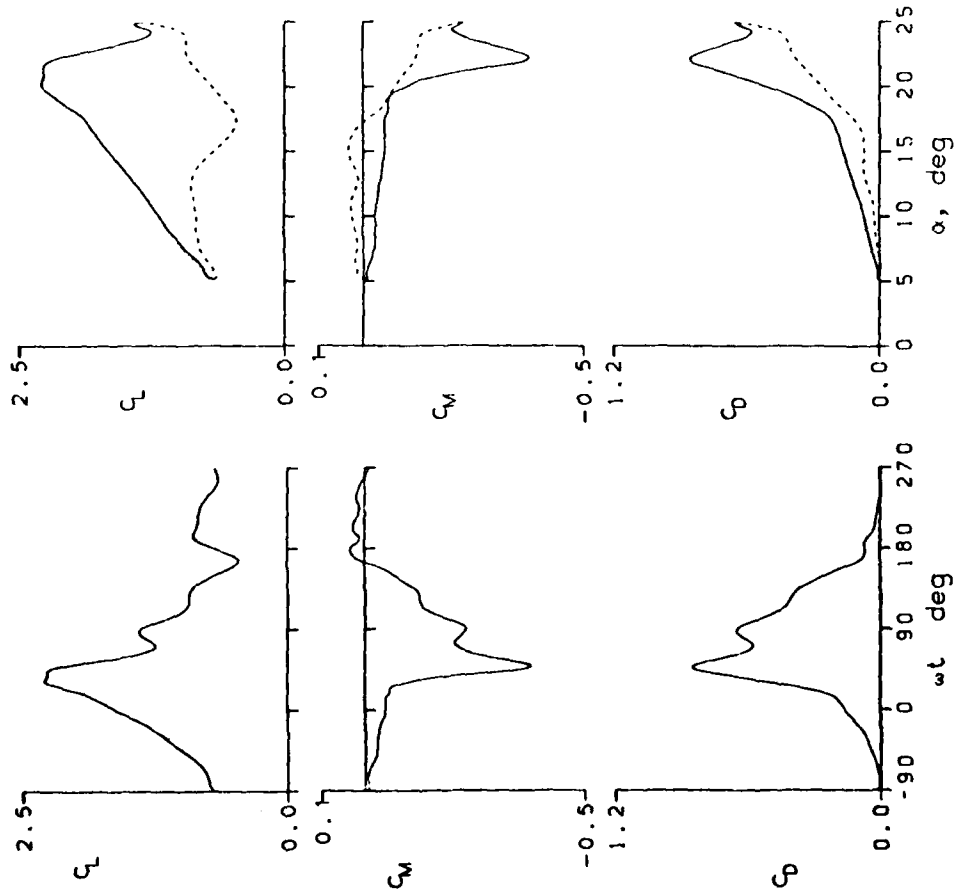


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRAME: 42321 $A_0 = 14.82^\circ$ $k = 0.101$

$Re = 1.51 \times 10^6$ $A_1 = 9.84^\circ$ $M = 0.108$

$C_{Lmax} = 2.58$ $C_{Mmin} = -0.44$ $C_{Dmax} = 1.05$

$\alpha_{Lmax} = 22.8^\circ$ $\xi = 0.288$ $Mmax = 0.502$

$\alpha_{Cmin} = 14.4^\circ$ $-C_{Dmax} = 18.5$ $\alpha_{Mmax} = 22.3^\circ$

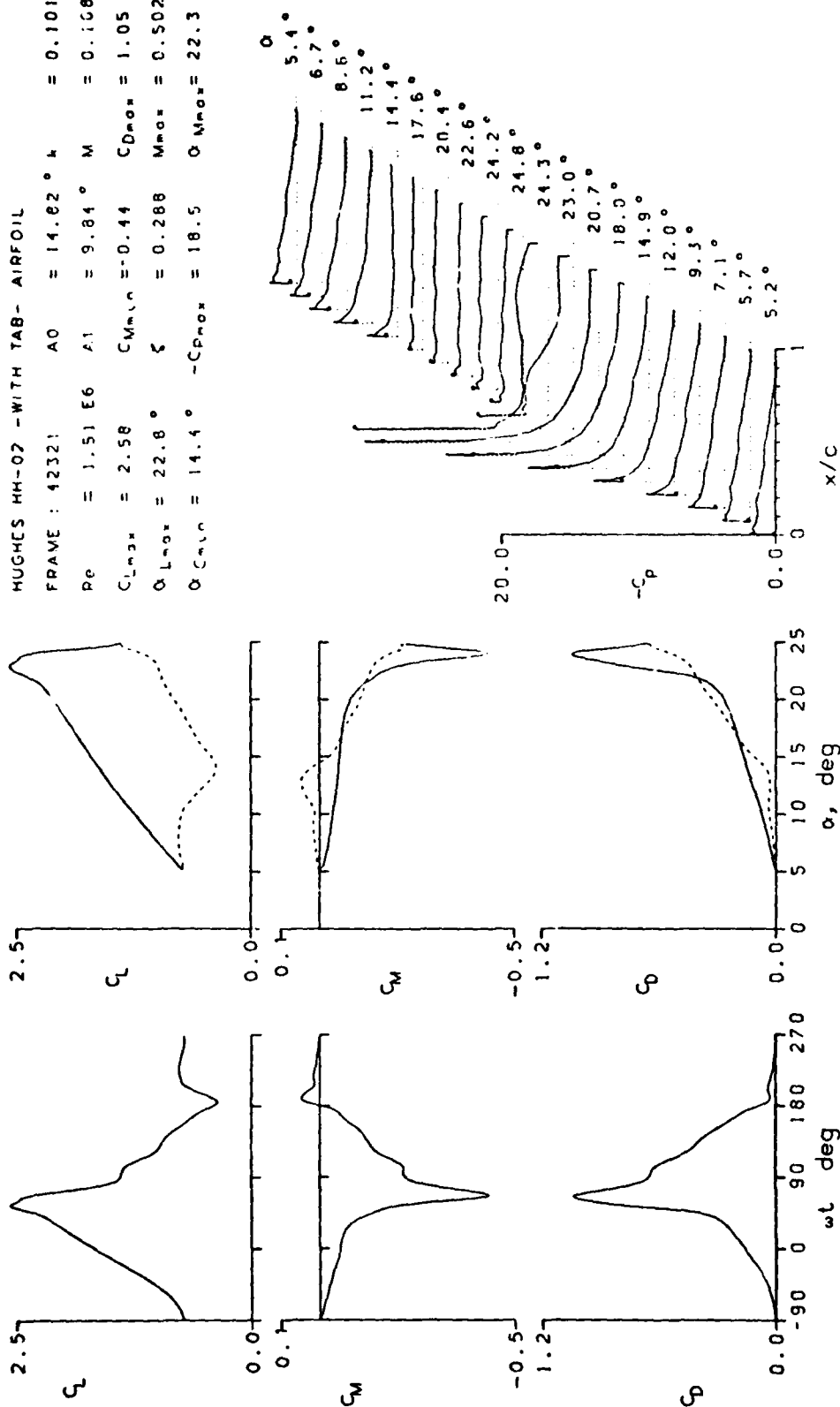


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL
 FRAME : 43019 $A_0 = 9.57^\circ$ $k = 0.010$
 $Re = 3.90 \text{ E}6$ $A_1 = 10.04^\circ$ $M = 0.297$
 $C_{Lmax} = 1.53$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.30$
 $\alpha_{Lmax} = 12.0^\circ$ $\xi = 0.042$ $M_{max} = 1.177$
 $\alpha_{Cmin} = 9.1^\circ$ $-C_{Dmax} = 8.9$ $\alpha_{Mmax} = 13.2^\circ$

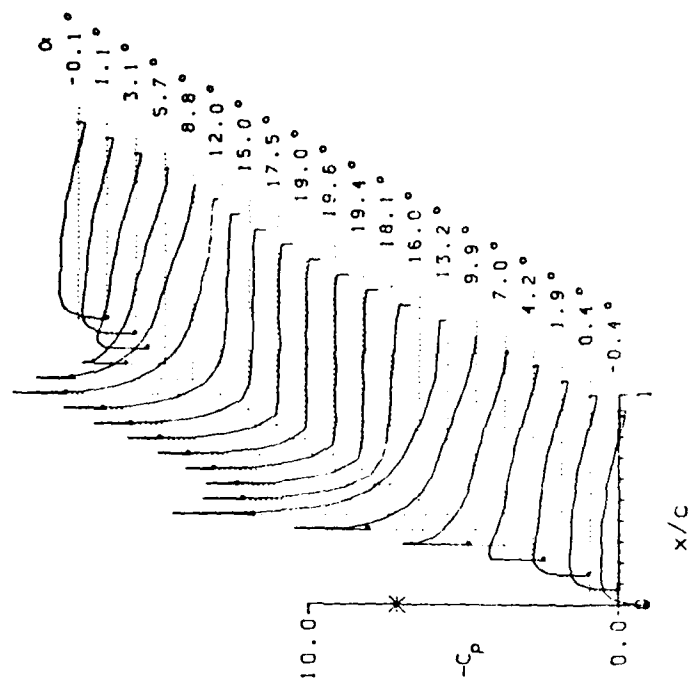
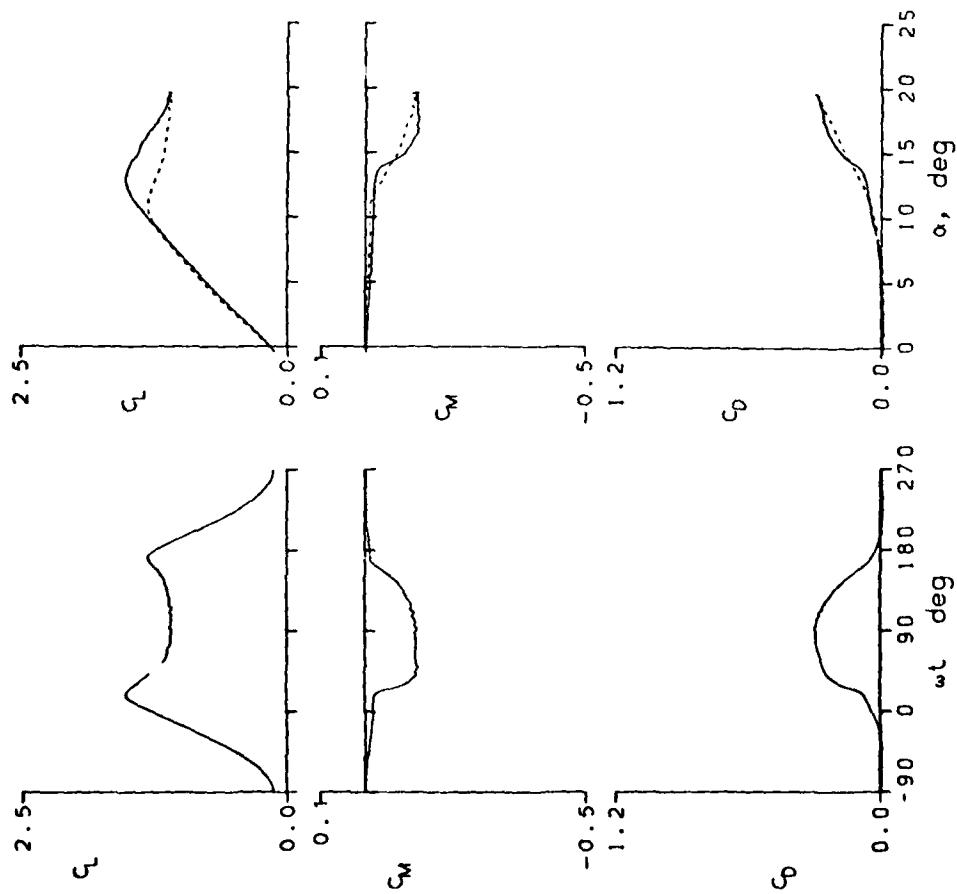


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL
 FRAME : 43106 $A_0 = 9.78^\circ$ $k = 0.025$
 $Re = 3.93 \text{ E} 6$ $A_1 = 9.90^\circ$ $M = 0.301$
 $C_{Lmax} = 1.64$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.41$
 $\alpha_{Lmax} = 15.6^\circ$ $\zeta = 0.088$ $M_{max} = 1.206$
 $\alpha_{Cmin} = 9.2^\circ$ $-C_{pmax} = 8.9$ $\alpha_{Mmax} = 13.5^\circ$

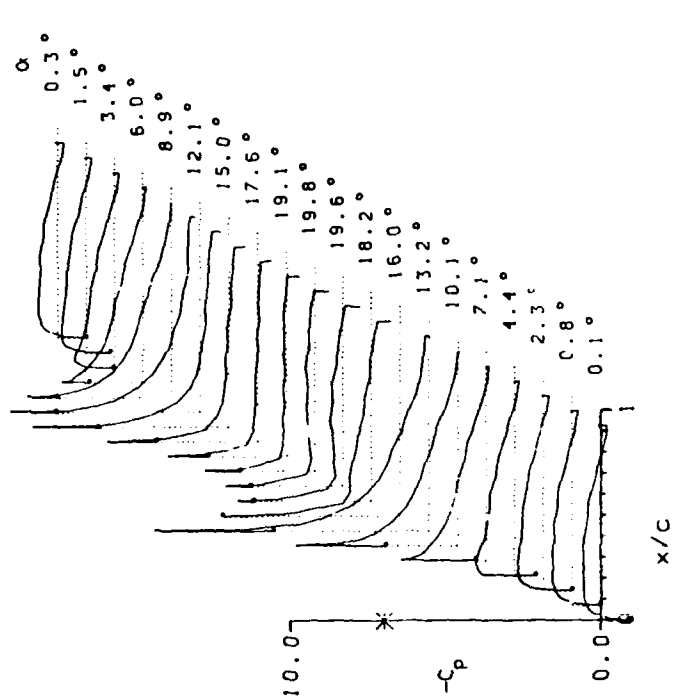
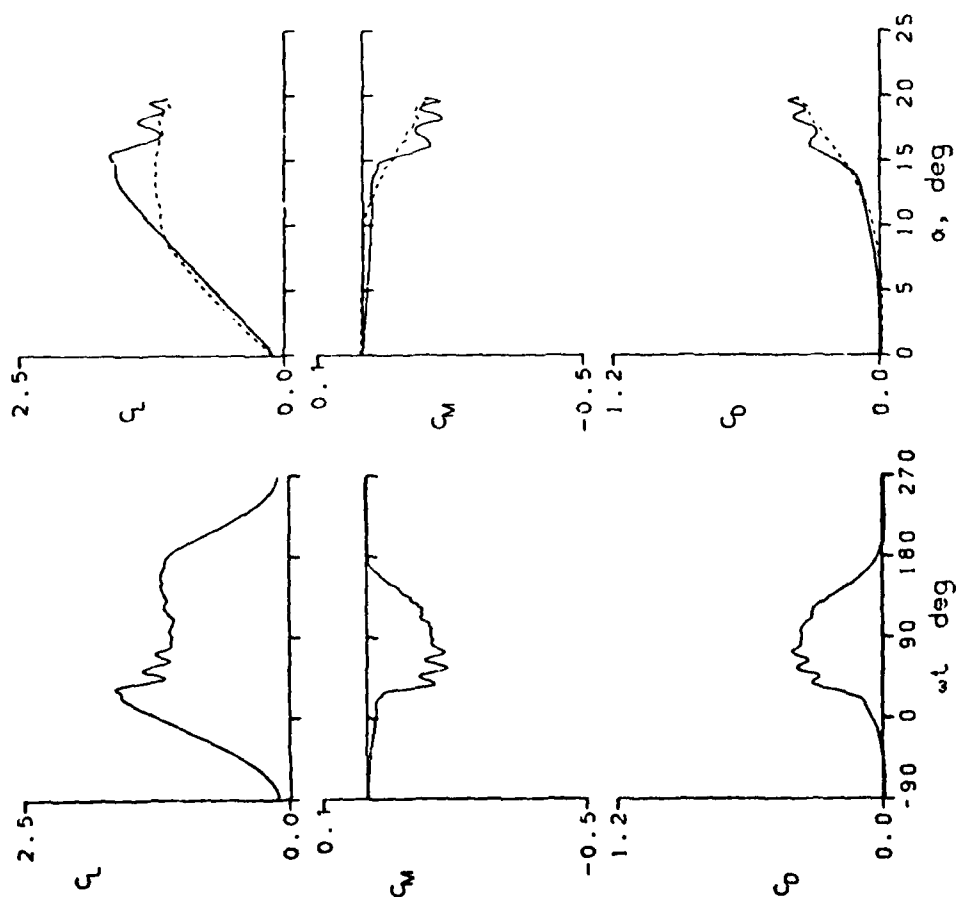


Figure 16.- Continued.

HUGHES HM-02 - WITH TAB - AIRFOIL

FRAME : 43108	A0 = 9.76°	h = 0.050
Re = 3.93 E6	A1 = 9.91°	M = 0.302
CLmax = 1.92	CMmin = -0.27	CDmax = 0.47
OLmax = 15.8°	ξ = 0.160	Mmax = 1.208
αCmin = 3.2°	-CPmax = 8.9	αMmax = 13.8°

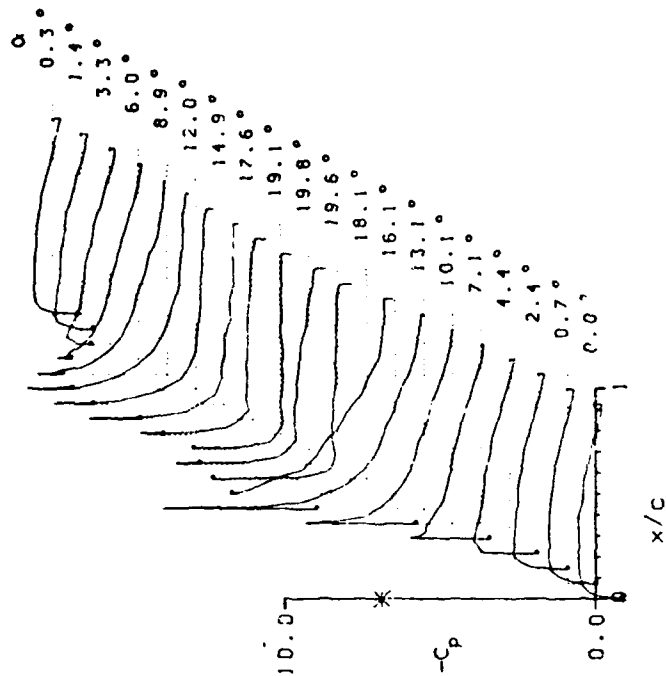
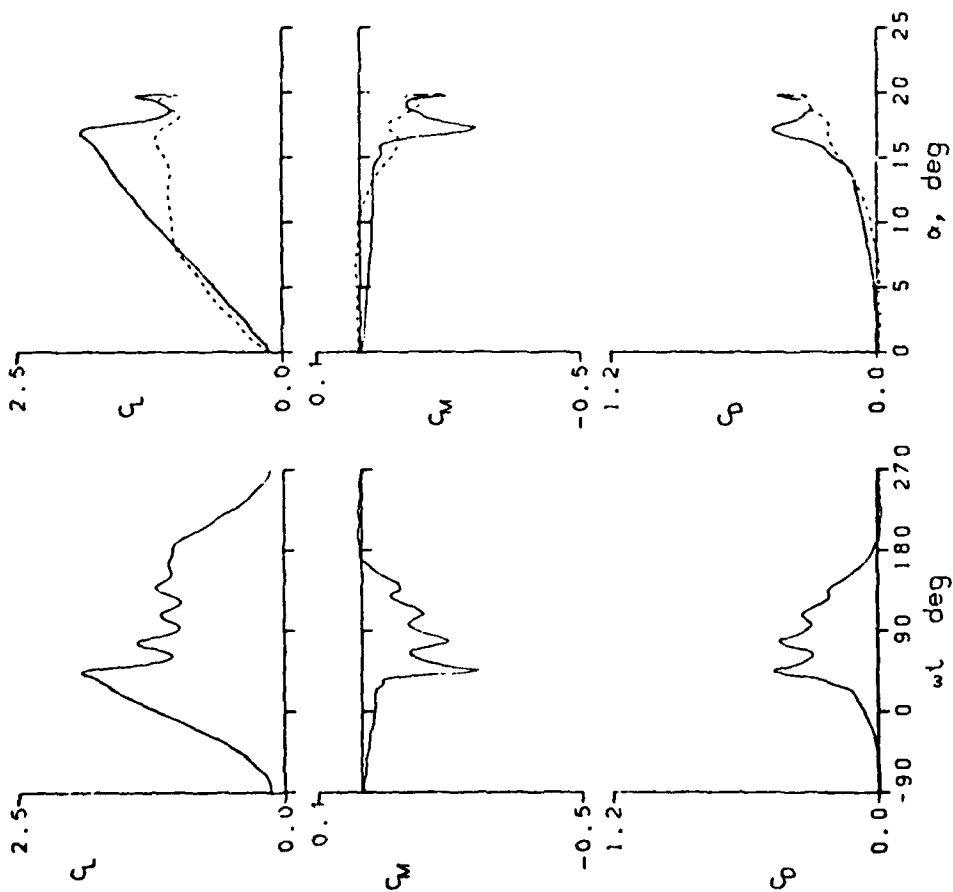


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 43112 $A_0 = 9.78^\circ$ $k = 0.099$
 $Re = 3.95 \text{ E}6$ $A_1 = 9.87^\circ$ $M = 0.302$
 $C_{Lmax} = 2.13$ $C_{Mmin} = -0.33$ $C_{Dmax} = 0.64$
 $\alpha_{Lmax} = 18.4^\circ$ $\xi = 0.314$ $M_{max} = 1.217$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 14.7^\circ$

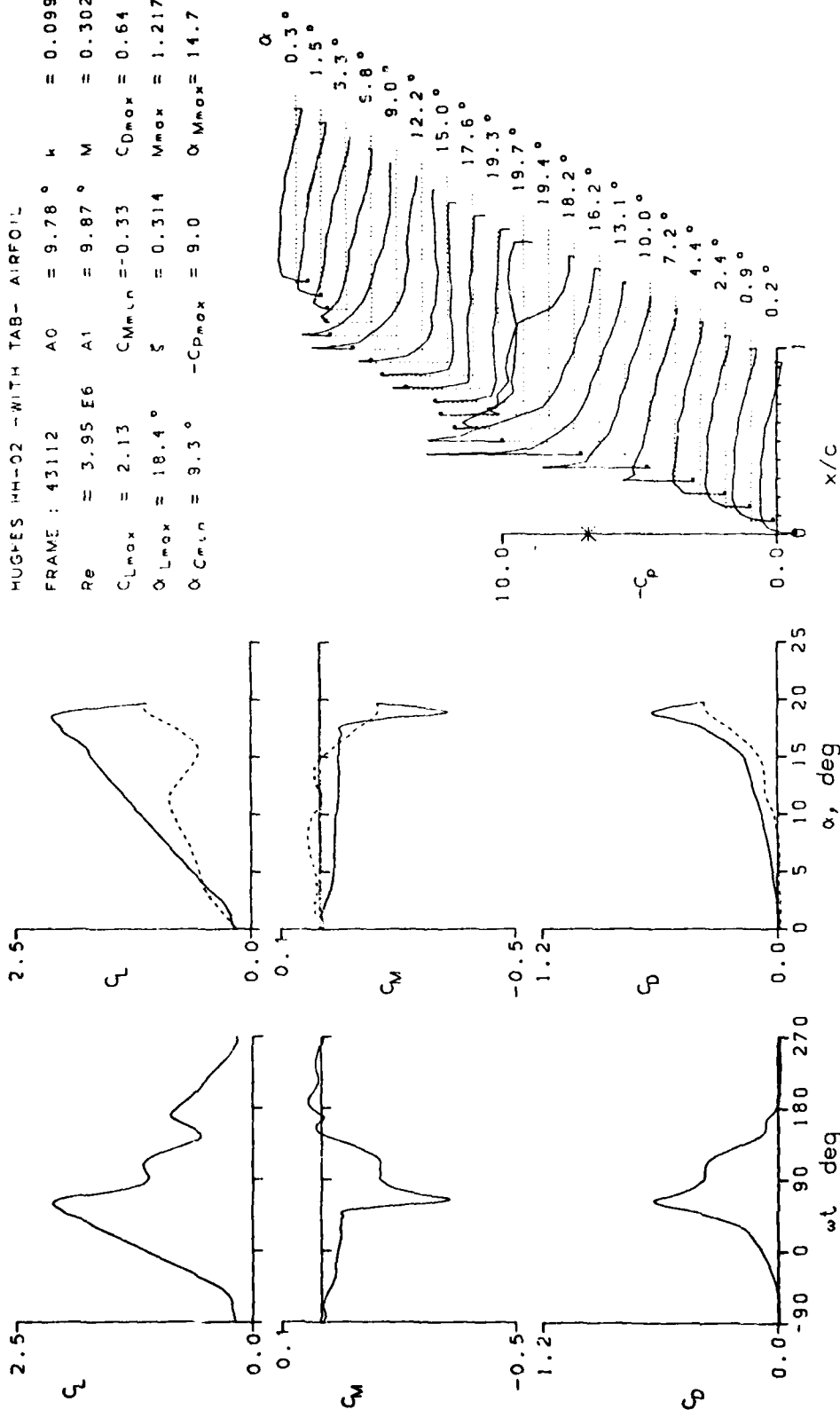


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 43114 $A_0 = 9.92^\circ$ $k = 0.150$
 $Re = 3.90 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.299$
 $C_{Lmax} = 2.18$ $C_{Mmin} = -0.35$ $C_{Dmax} = 0.70$
 $\alpha_{Lmax} = 19.5^\circ$ $\zeta = 0.299$ $M_{max} = 1.214$
 $\alpha_{Cmin} = 9.4^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 15.8^\circ$

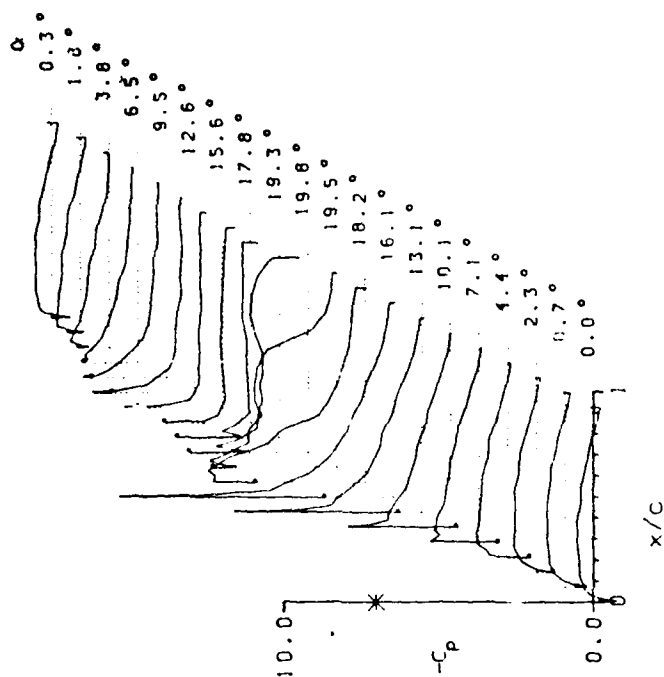
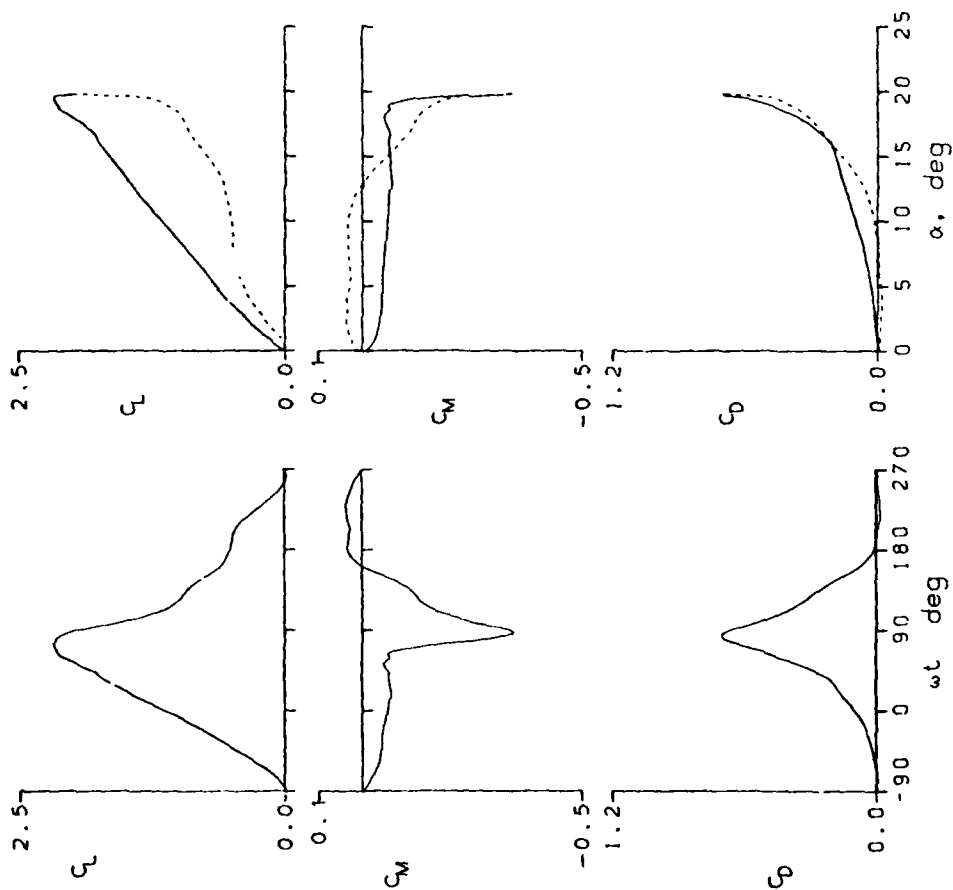


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 43117	A0 = 9.93°	k = 0.151
Re = 3.89 E6	A1 = 9.90°	M = 0.297
C _{Lmax} = 2.19	CM _{min} = -0.35	CDmax = 0.70
α _{Lmax} = 19.5°	ξ = 0.319	Mmax = 1.214
α _{CMmin} = 9.4°	-CDmax = 9.2	α _{Mmax} = 15.8°

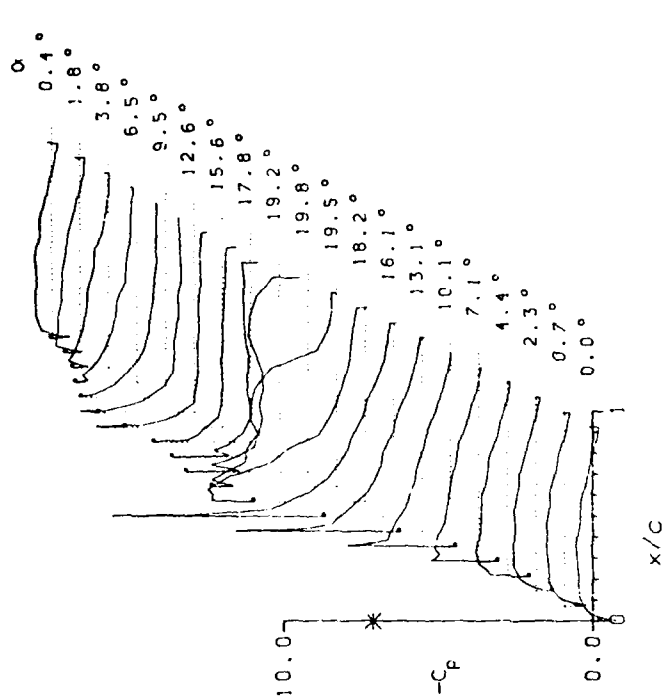
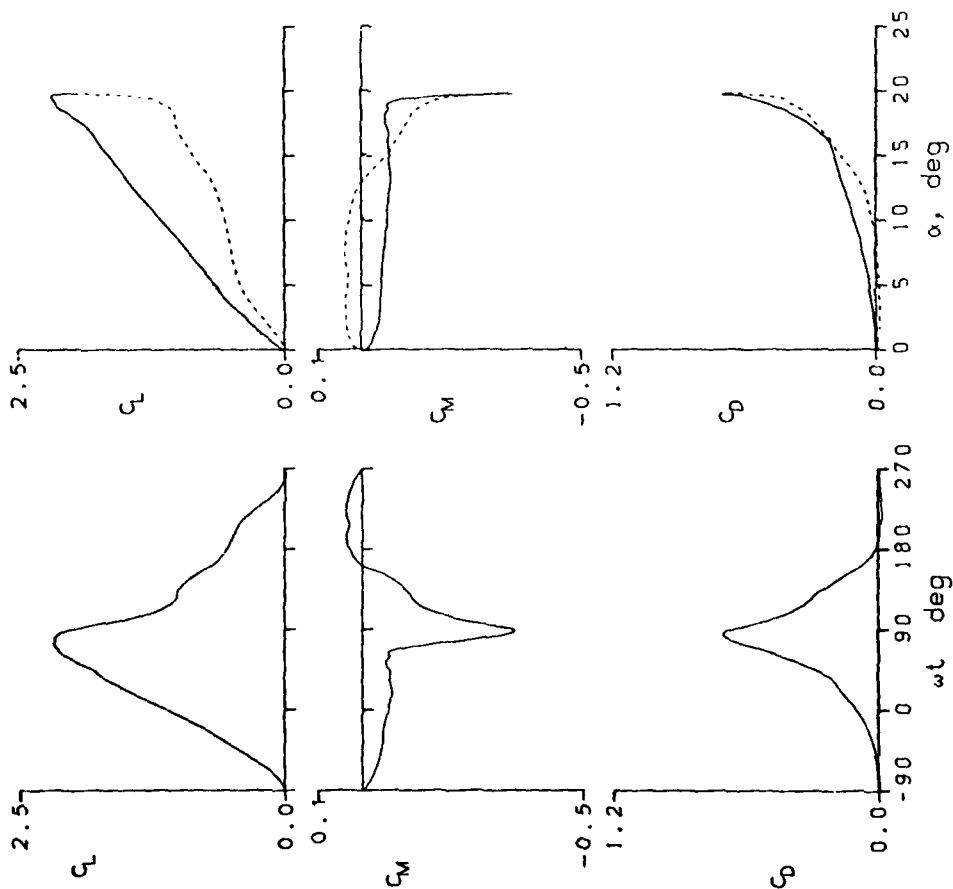


Figure 16.- Continued.

HUGHES PH-02 - WITH TAB- AIRFOIL
 FRAME : 43202 $A_0 = 3.61^\circ$ $\mu = 0.025$
 $R_0 = 3.97 \text{ E6}$ $A_1 = 10.13^\circ$ $M = 0.301$
 $C_{Lmax} = 1.52$ $C_{Mmax} = -0.05$ $C_{Dmax} = 0.12$
 $\alpha_{Lmax} = 13.1^\circ$ $\xi = 0.075$ $M_{max} = 1.212$
 $\alpha_{C-Lin} = 3.1^\circ$ $-C_{Dmax} = 0.9$ $\alpha_{Mmax} = 13.6^\circ$

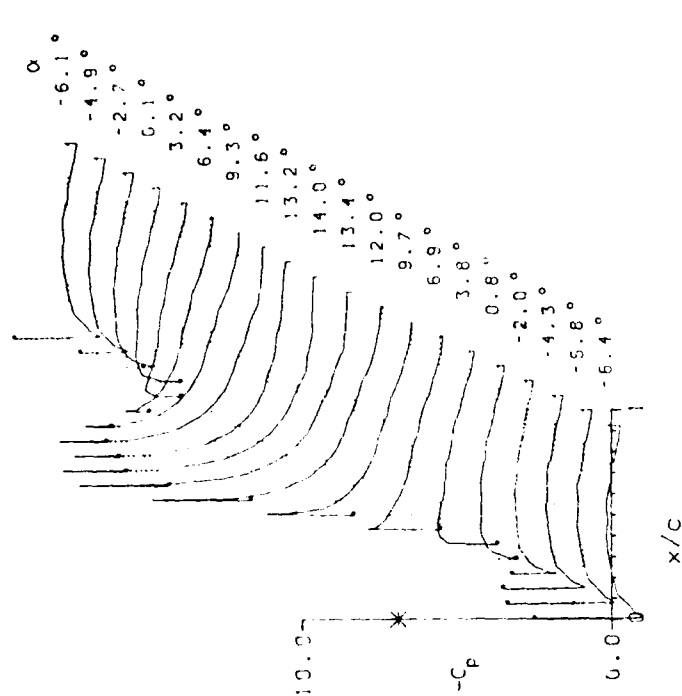
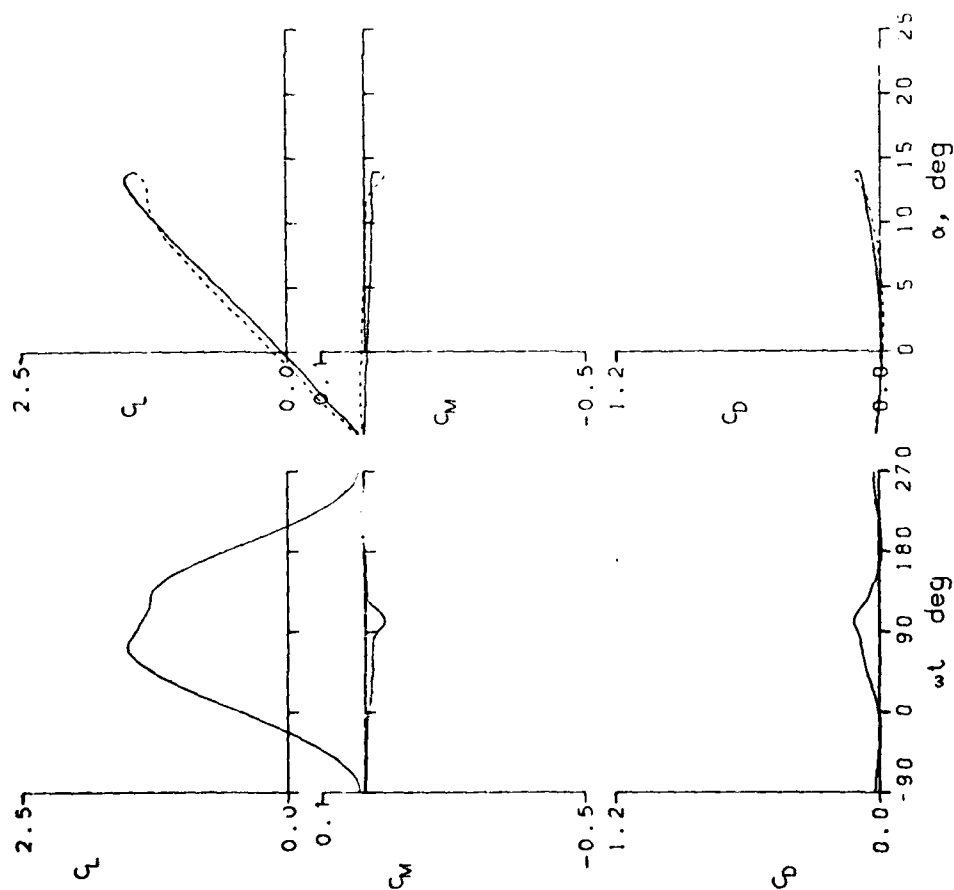


Figure 16.- Continued.

HUGHES HW-02 - WITH TAB - AIRFOIL
 FRAME : 43204 $A_0 = 3.62^\circ$ $k = 0.050$
 $Re = 3.96 E6$ $A_1 = 10.12^\circ$ $M = 0.302$
 $C_{Lmax} = 1.58$ $C_{Mmin} = -0.03$ $C_{Dmax} = 0.11$
 $\alpha_{Lmax} = 13.7^\circ$ $\xi = 0.154$ $M_{max} = 1.218$
 $\alpha_{Cmin} = 3.1^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 13.6^\circ$

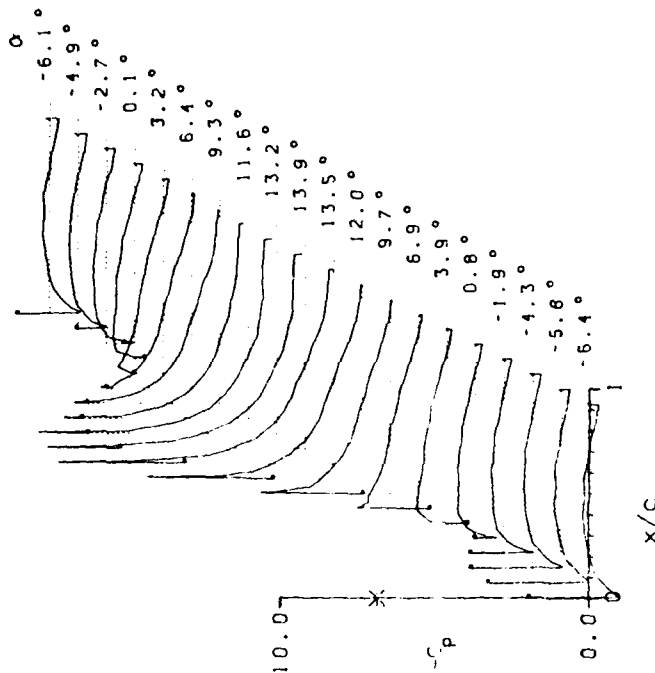
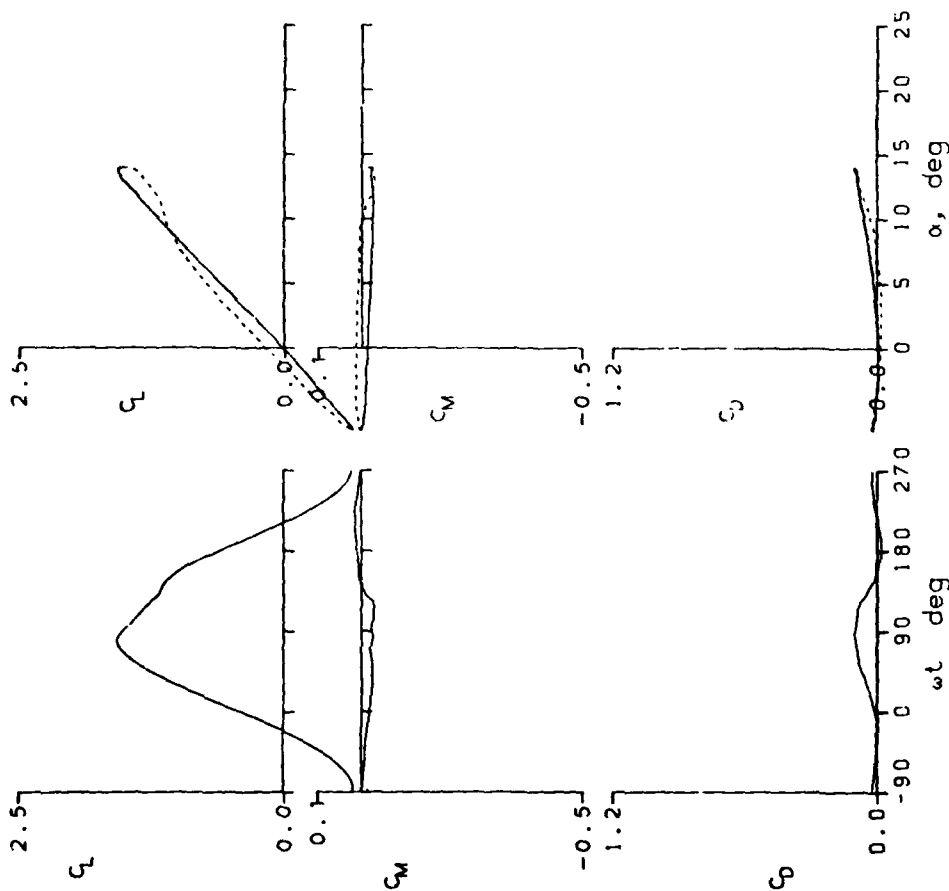


Figure 16.- Continued.

HUGHES -H-02 -WITH TAB- AIRFOIL
 FRAME : 47206 $A_0 = 3.66^\circ$ $k = 0.099$
 $Re = 3.96 \text{ E}6$ $A_1 = 10.10^\circ$ $M = 0.302$
 $C_{Lmax} = 1.61$ $C_{Mmin} = -0.04$ $C_{Dmax} = 0.13$
 $\alpha_{Lmax} = 14.2^\circ$ $\xi = 0.337$ $M_{max} = 1.223$
 $\alpha_{Cmin} = 3.2^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 13.9^\circ$

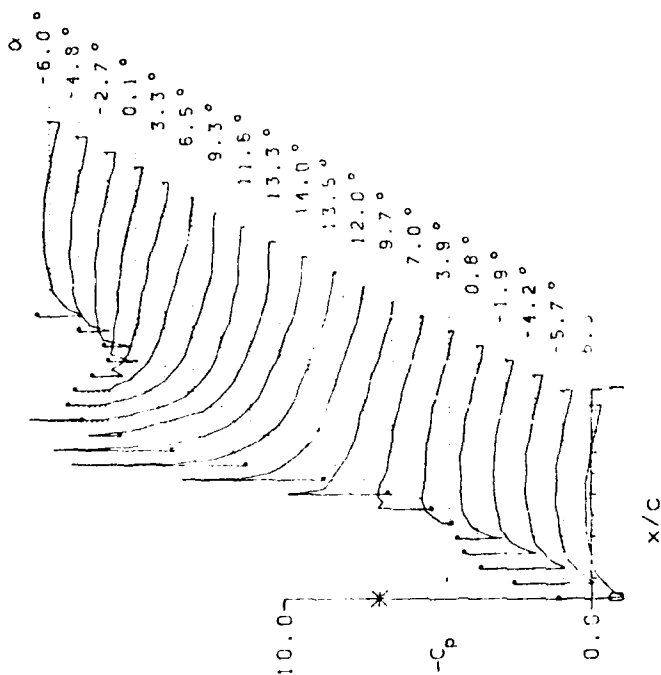
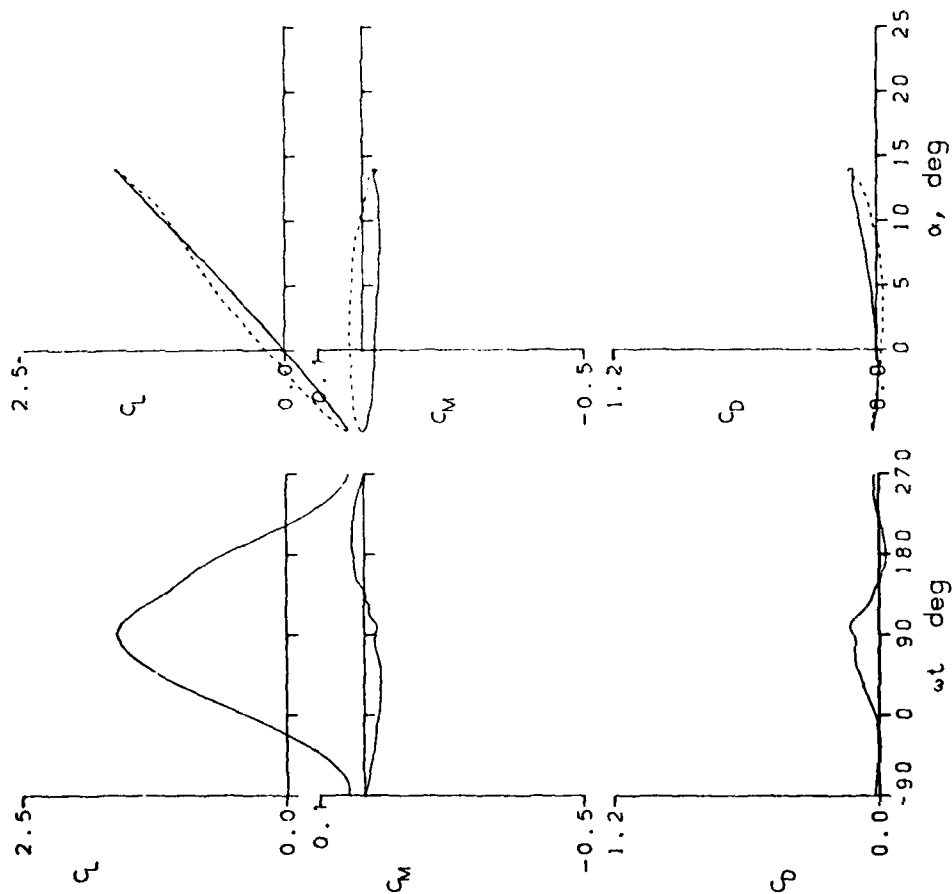


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL

FRAME : 43209	$A_0 = 3.62^\circ$	$k = 0.149$
$Re = 3.96 \text{ E}6$	$A_1 = 10.11^\circ$	$M = 0.302$
$C_{Lmax} = 1.62$	$C_{Mmin} = -0.06$	$C_{Dmax} = 0.13$
$\alpha_{Lmax} = 13.9^\circ$	$\xi = 0.514$	$M_{max} = 1.224$
$\alpha_{Cmin} = 3.1^\circ$	$-C_{Dmax} = 9.0$	$\alpha_{Mmax} = 13.9^\circ$

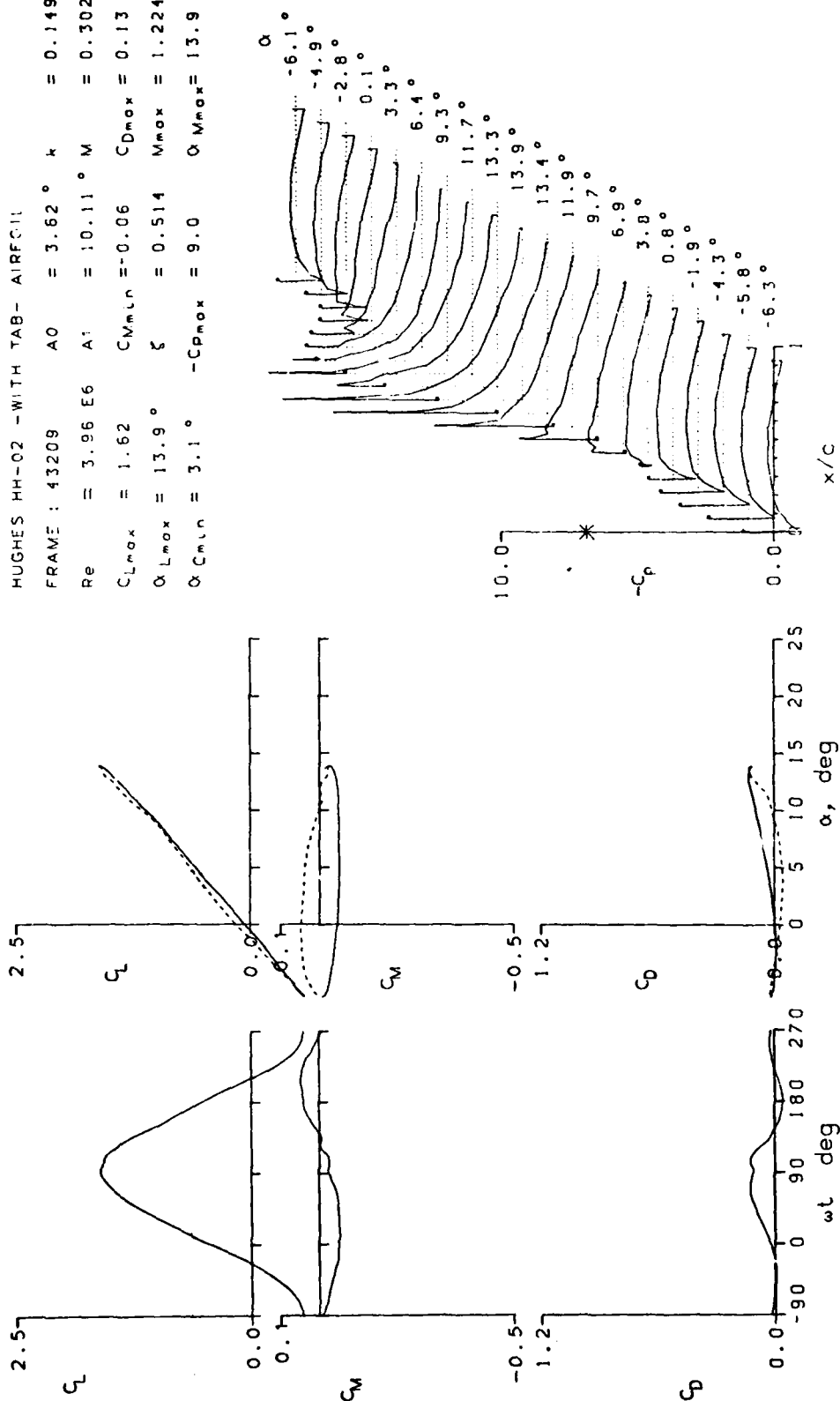


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRAME : 43215 $A_0 = 3.62^\circ$ $k = 0.010$

$R_0 = 4.06$ E6 $A_1 = 10.13^\circ$ $M = 0.302$

$C_{Lmax} = 1.51$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.13$

$\alpha_{Lmax} = 13.0^\circ$ $\xi = 0.029$ $V_{max} = 1.214$

$\alpha_{C_{Lmin}} = 3.1^\circ$ $-C_{Dmax} = 8.9$ $\alpha_{V_{max}} = 13.5^\circ$

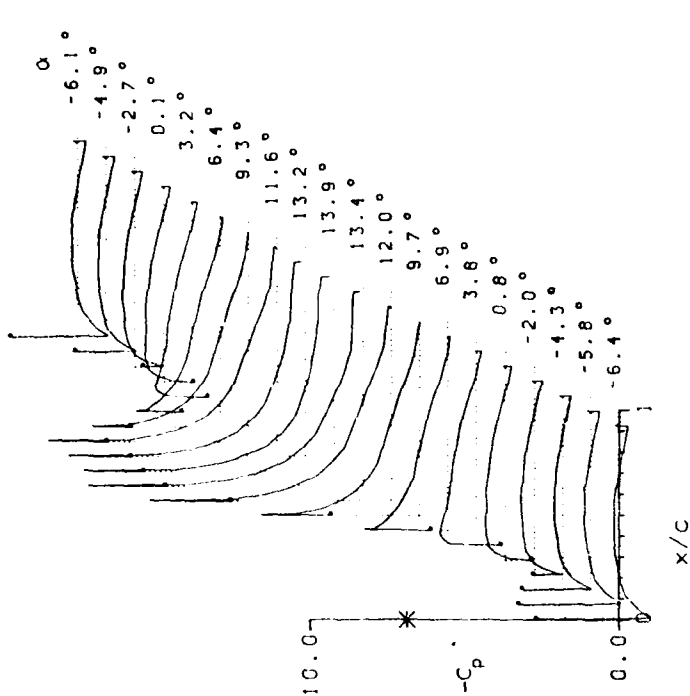
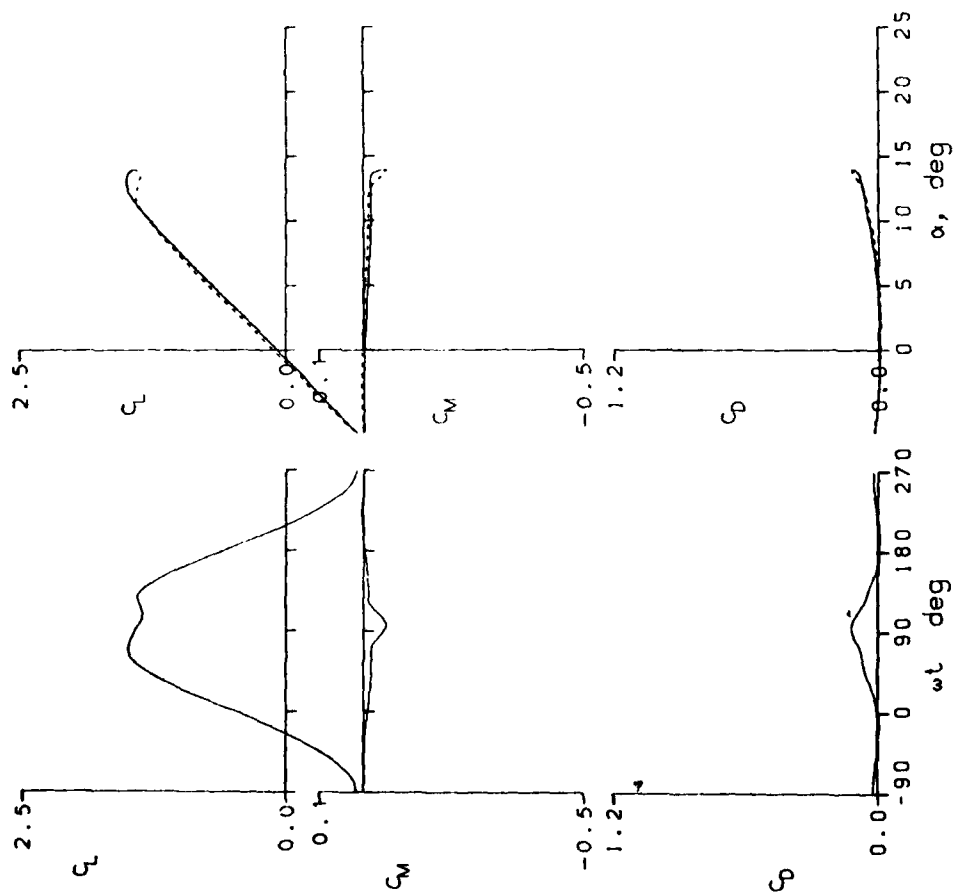


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL
 FRAME : 43219 $\Lambda_0 = 3.84^\circ$ $\kappa = 0.100$
 $Re = 4.05 E6$ $A_1 = 10.12^\circ$ $M = 0.303$
 $C_{Lmax} = 1.65$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.16$
 $\alpha_{Lmax} = 14.1^\circ$ $\alpha_{C_{Lmax}} = 0.300$ $M_{max} = 1.241$
 $\alpha_{C_{Lmin}} = 3.3^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 13.9^\circ$

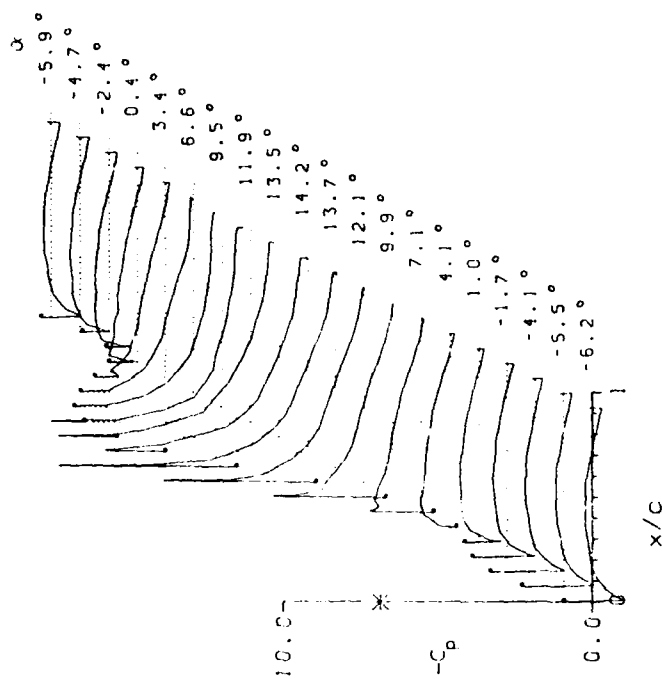
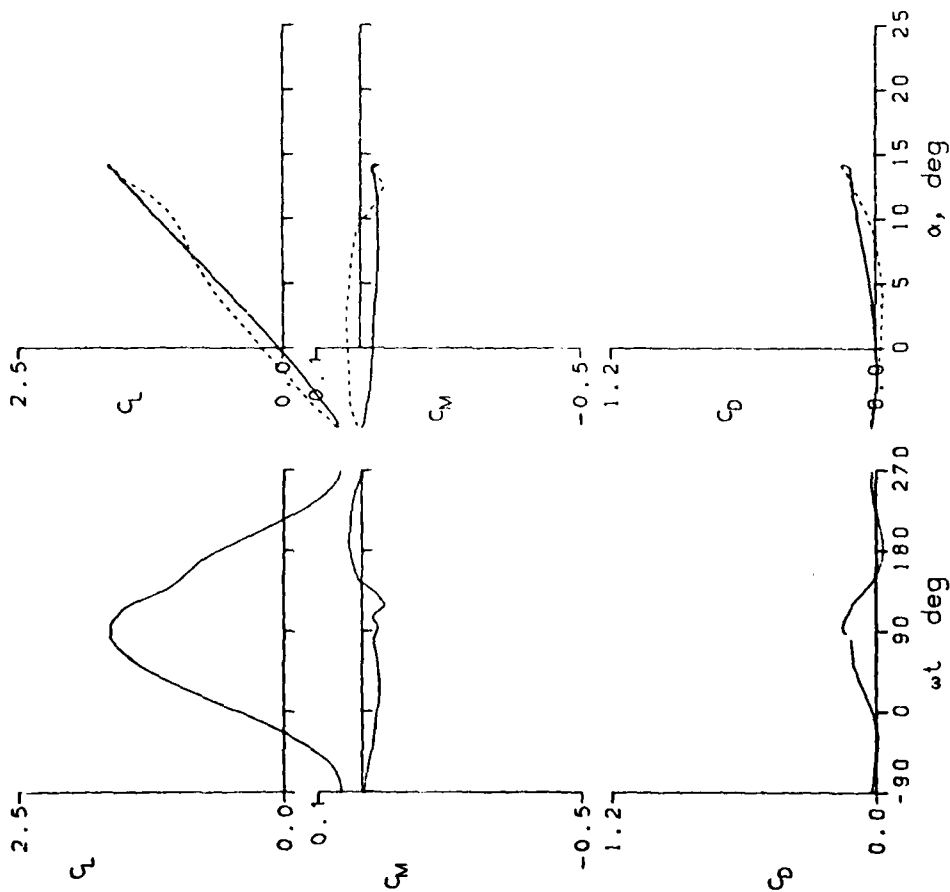


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL
 FRAME : 43303 $A_0 = 14.96^\circ$ $k = 0.025$
 $Re = 3.92 E6$ $A_1 = 4.88^\circ$ $M = 0.296$
 $C_{Lmax} = 1.54$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.31$
 $\alpha_{Lmax} = 13.9^\circ$ $\xi = 0.104$ $M_{max} = 1.210$
 $\alpha_{Crn} = 14.8^\circ$ $-C_{pmpk} = 9.2$ $\alpha_{M_{max}} = 14.1^\circ$

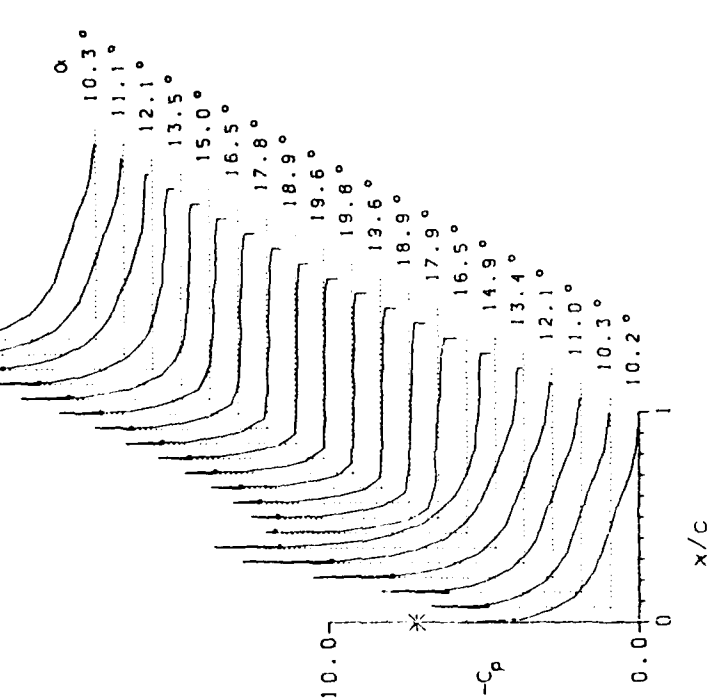
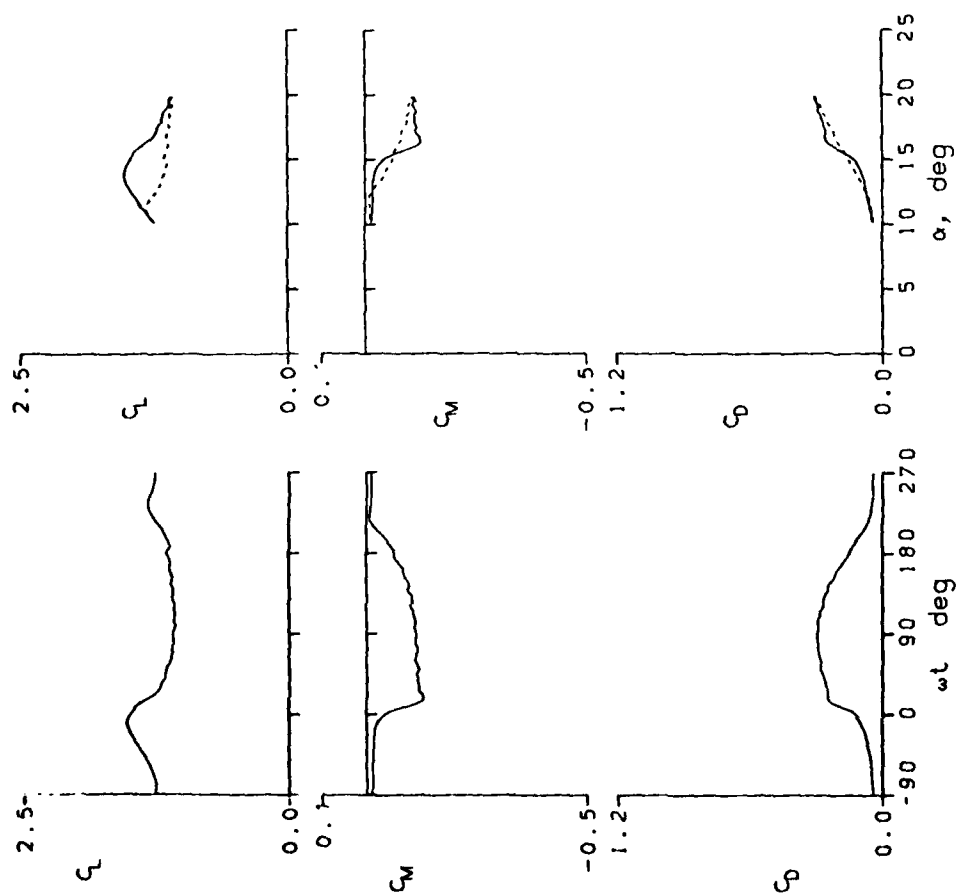


Figure 16.- Continued.

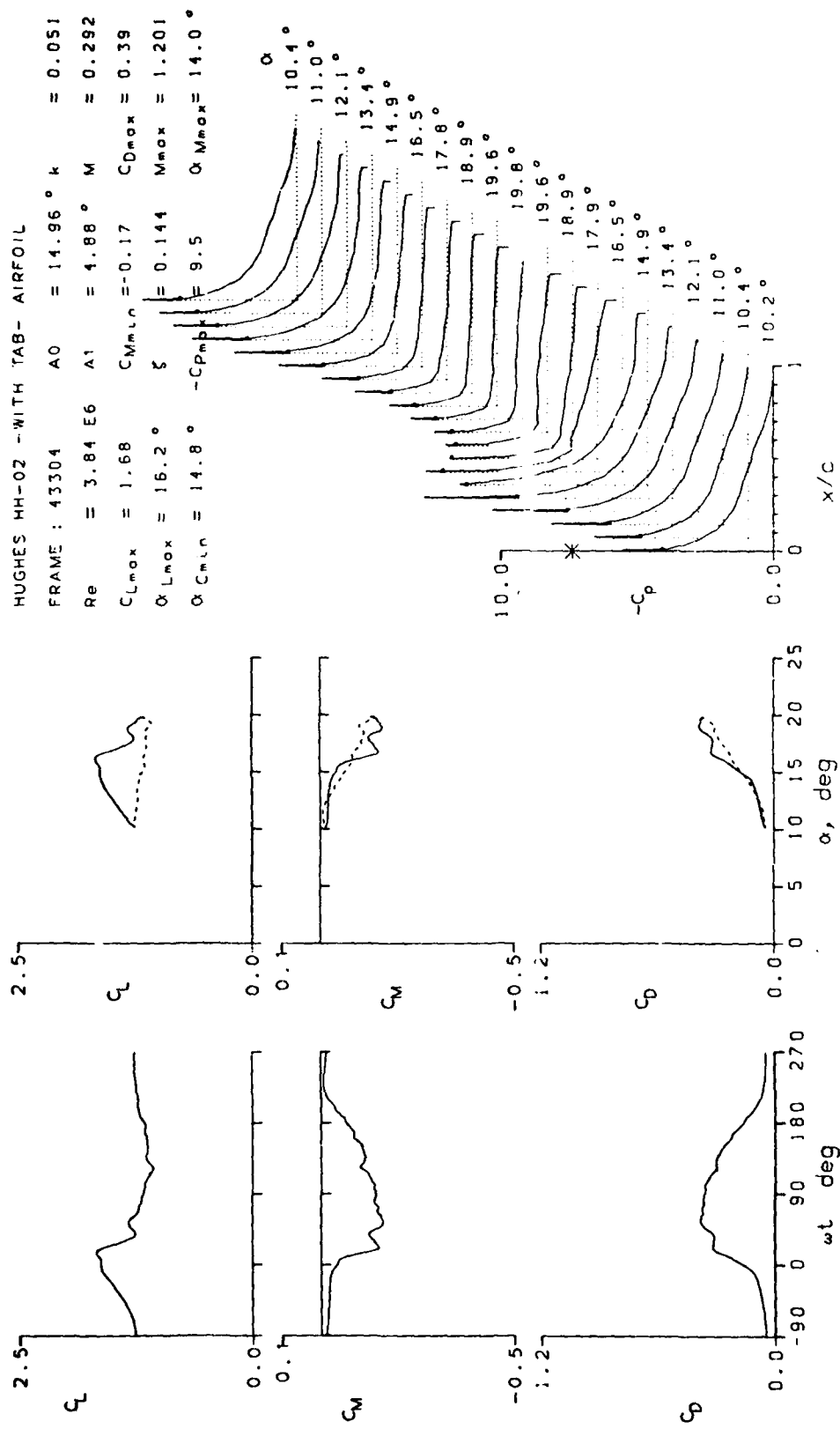


Figure 16.- Continued.

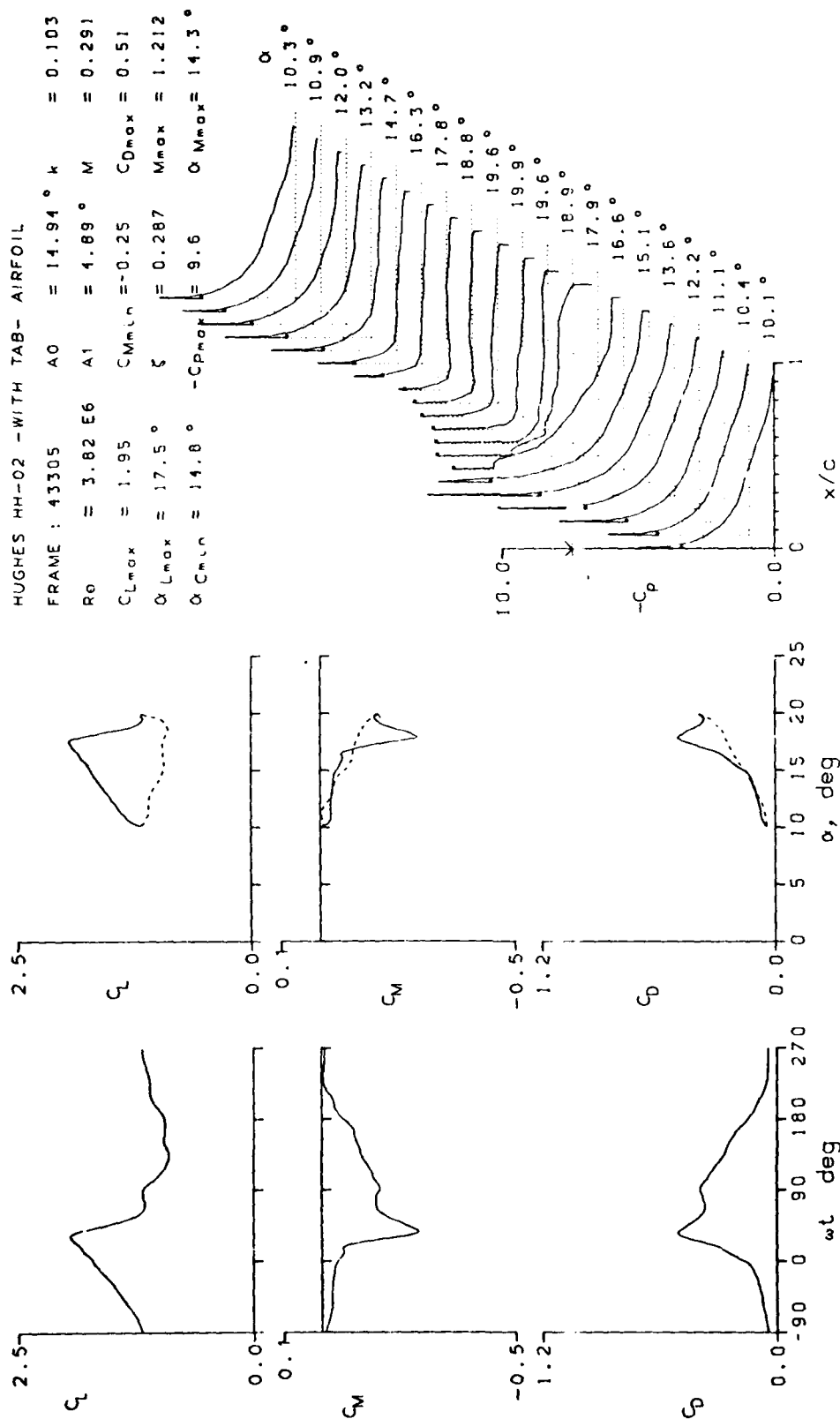


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 43308 $A_0 = 14.91^\circ$ $k = 0.135$

$Re = 3.81 \text{ E}6$ $A^* = 4.90^\circ$ $M = 0.290$

$C_{Lmax} = 2.09$ $C_{Mmin} = -0.31$ $C_{Dmax} = 0.61$

$\alpha_{Lmax} = 18.4^\circ$ $\zeta = 0.511$ $M_{max} = 1.209$

$\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 9.6$ $\alpha_{Mmax} = 14.7^\circ$

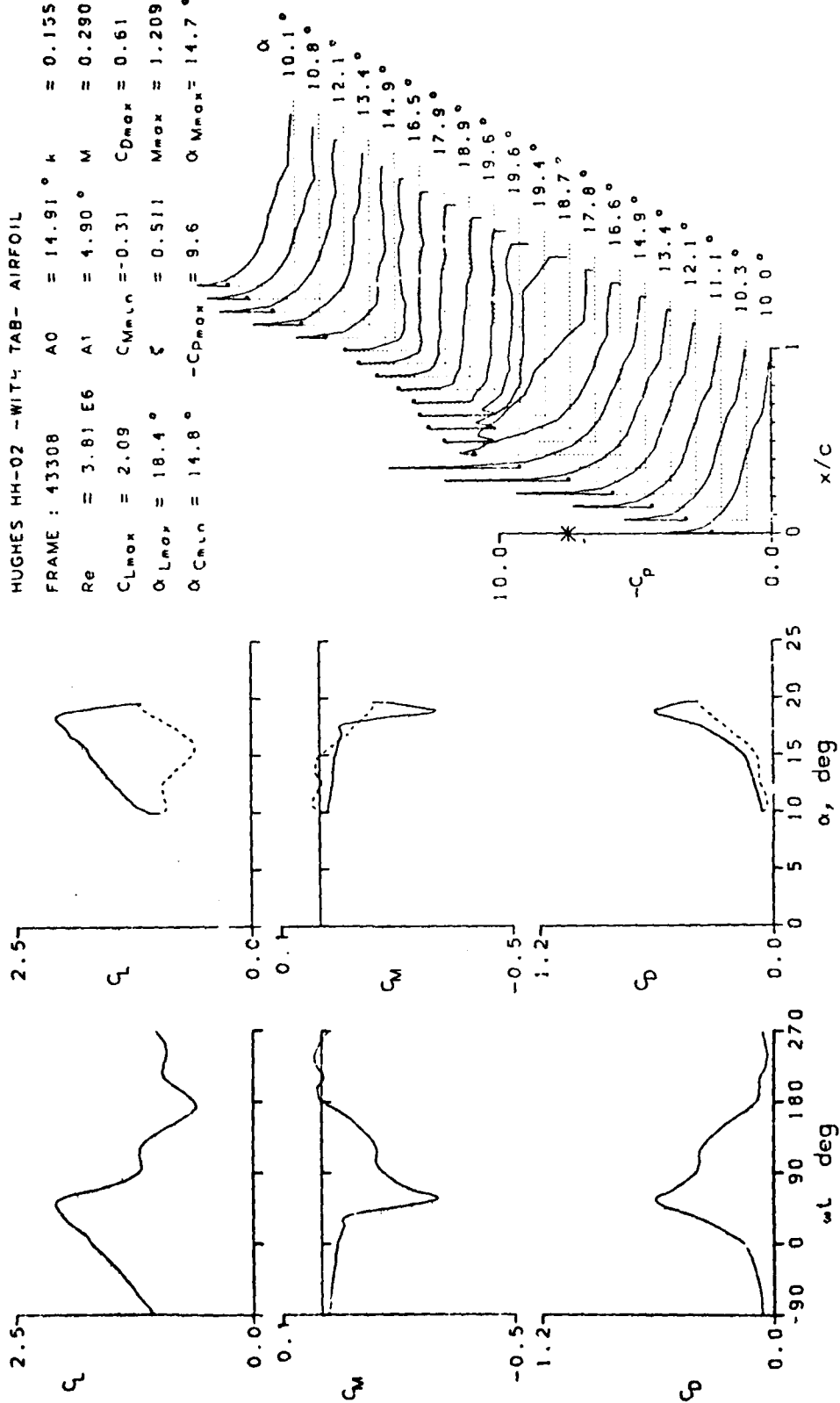


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 43309 $A_0 = 14.94^\circ$ $k = 0.207$

$Re = 3.78 \text{ E}6$ $A_1 = 4.88^\circ$ $M = 0.289$

$C_{Lmax} = 2.35$ $C_{Mmin} = -0.39$ $C_{Dmax} = 3.76$

$\alpha_{Lmax} = 19.3^\circ$ $\zeta = 0.173$ $M_{max} = 1.198$

$\alpha_{Cmin} = 14.7^\circ$ $-C_{Dmax} = 9.6$ $\alpha_{Mmax} = 15.9^\circ$

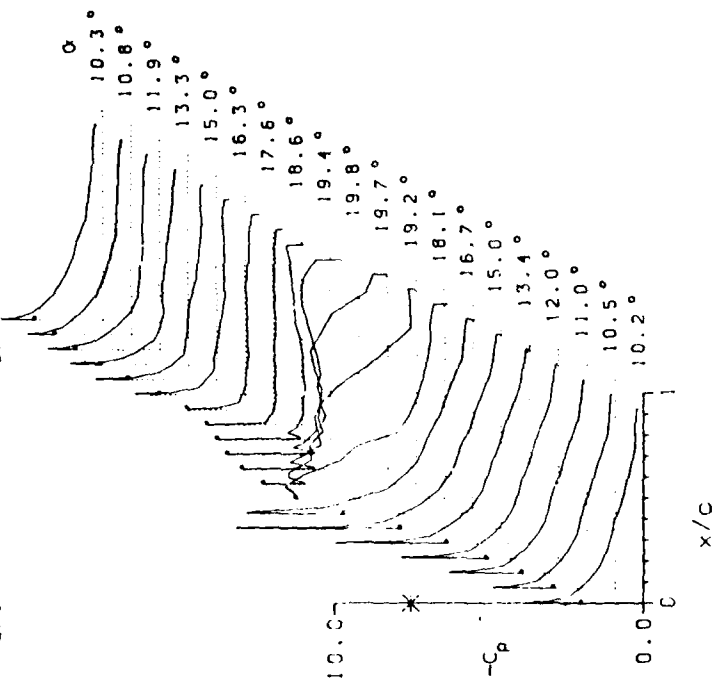
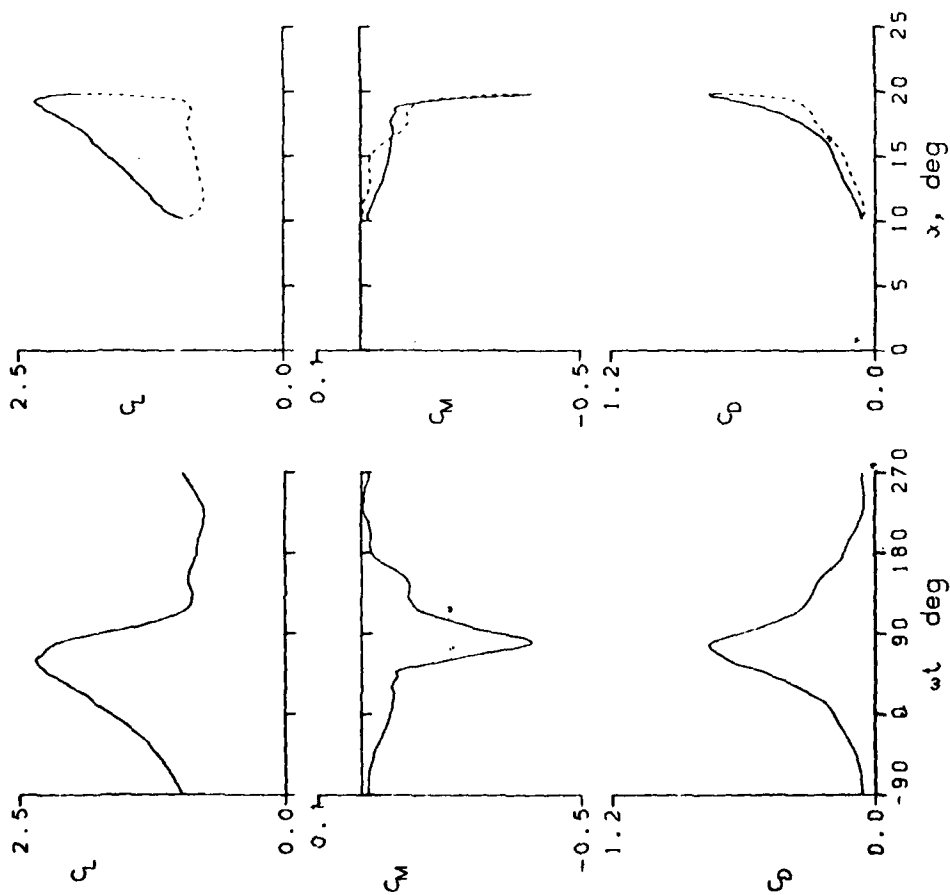


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL
 FRAME : 43314 $A_0 = 10.89^\circ$ $k = 0.025$
 $R_0 = 3.93 \text{ E6}$ $A_1 = 4.89^\circ$ $M = 0.302$
 $C_{L_{max}} = 1.54$ $C_{M_{min}} = -0.12$ $C_{D_{max}} = 0.22$
 $\alpha_{L_{max}} = 13.5^\circ$ $\xi = 0.000$ $M_{max} = 1.221$
 $\alpha_{C_{min}} = 10.6^\circ$ $-C_{D_{max}} = 9.40$ $M_{max} = 13.8^\circ$

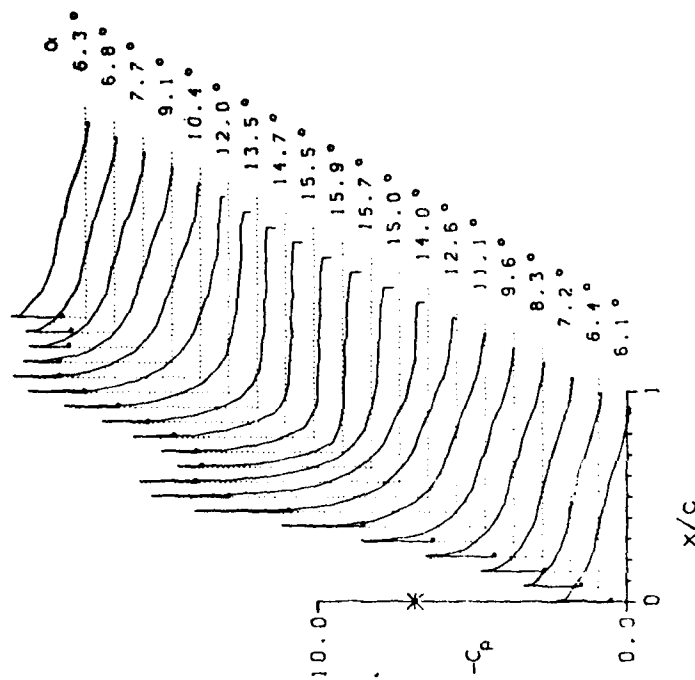
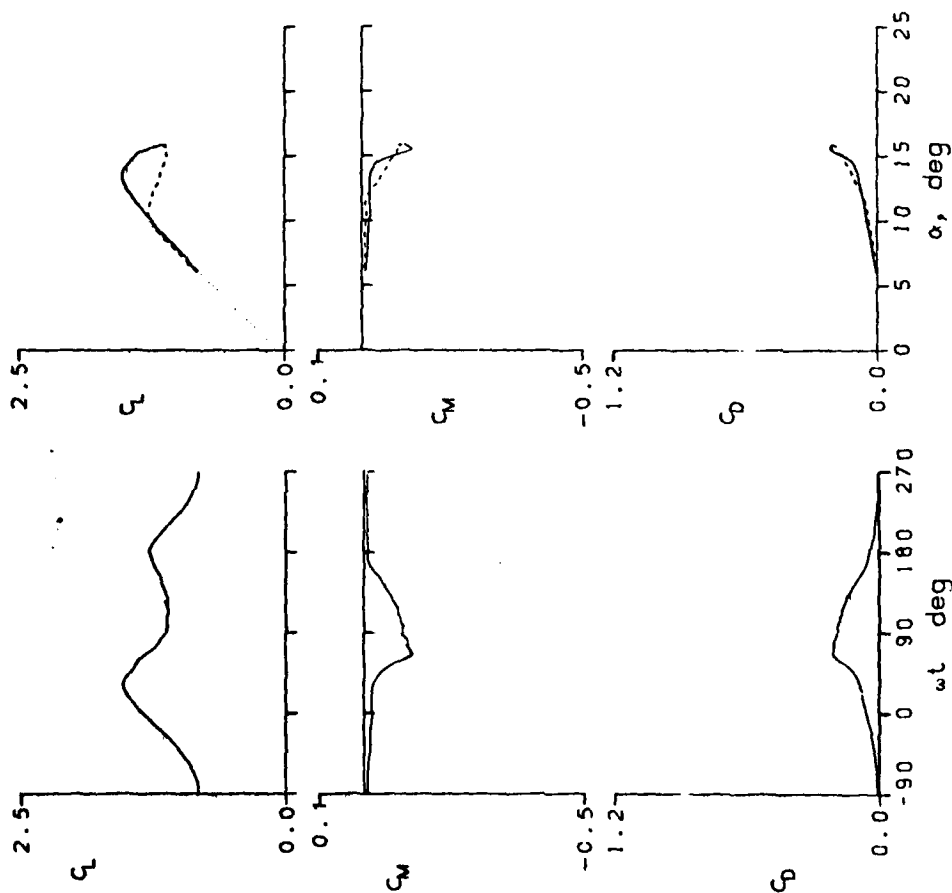


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB - AIRFOIL

FRAME : 42315	$A_0 = 10.90^\circ$	$k = 0.049$
$Re = 3.92 \times 10^6$	$A' = 4.91^\circ$	$M = 0.302$
$C_{Lmax} = 1.59$	$C_{Mmin} = -0.12$	$C_{Dmax} = 0.26$
$\alpha_{C_{Lmax}} = 13.3^\circ$	$\xi = 0.27$	$M_{max} = 1.209$
$\alpha_{C_{Lmin}} = 10.0^\circ$	$-C_{Dmax} = 8.9$	$\alpha_{M_{max}} = 13.3^\circ$

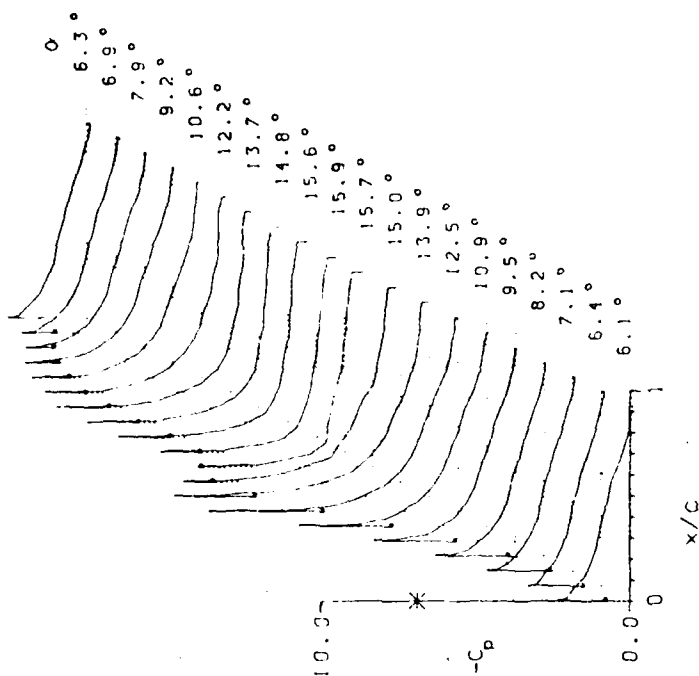
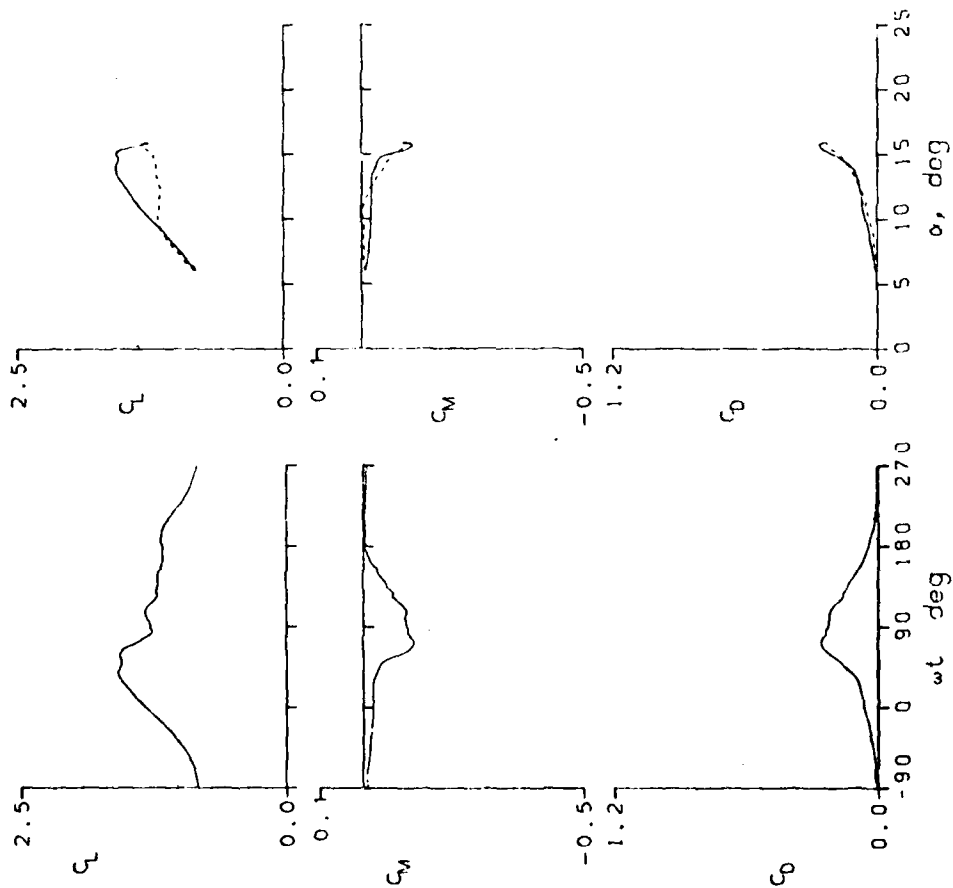


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 43316 AC = 10.91° k = 0.099
 Re = 3.91 E6 A1 = 4.89° M = 0.302
 C_{Lmax} = 1.75 C_{Mmin} = -0.17 C_{Dmax} = 0.32
 α_{max} = 15.7° C_L = 0.20 M_{max} = 1.221
 α_{Cmin} = 10.6° -C_{Dmax} = 9.0 α_{Mmax} = 13.8°

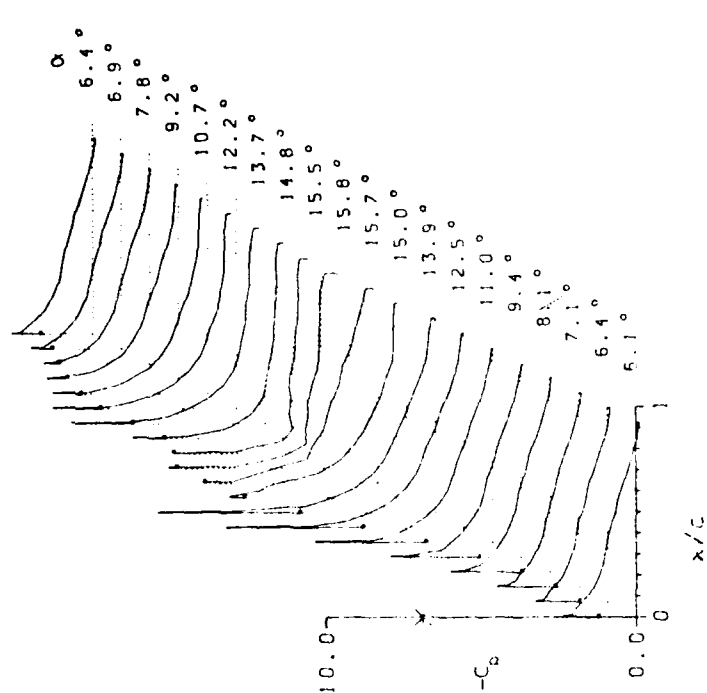
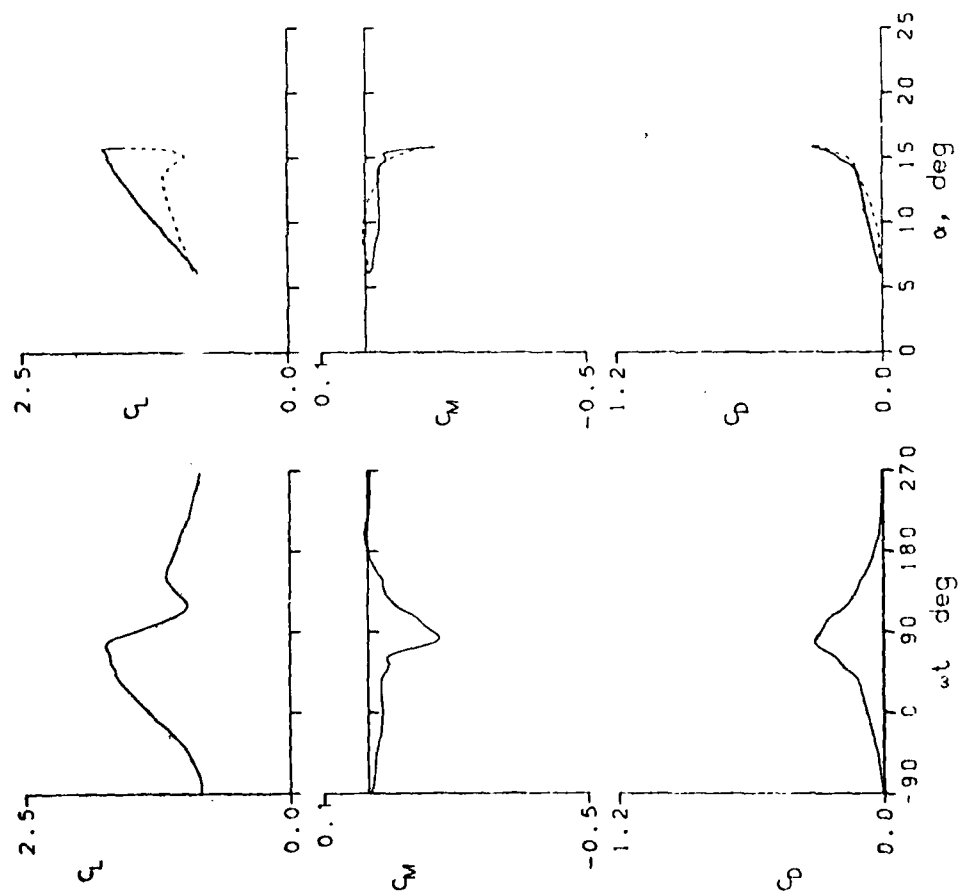


Figure 16.- Continued.

HUGHES 44-02 - WITH TAB- AIRFOIL

FRAME : 44013	AC = 9.55°	k = 0.010
Re = 3.05 E6	A1 = 5.09°	M = 0.301
C _{Lmax} = 1.48	C _{Mmax} = -0.09	C _{Dmax} = 0.17
α _{1max} = 13.1°	ξ = -0.076	M _{max} = 1.173
α _{2max} = 14.4°	-C _{Dmax} = 9.6	α _{3max} = 13.3°

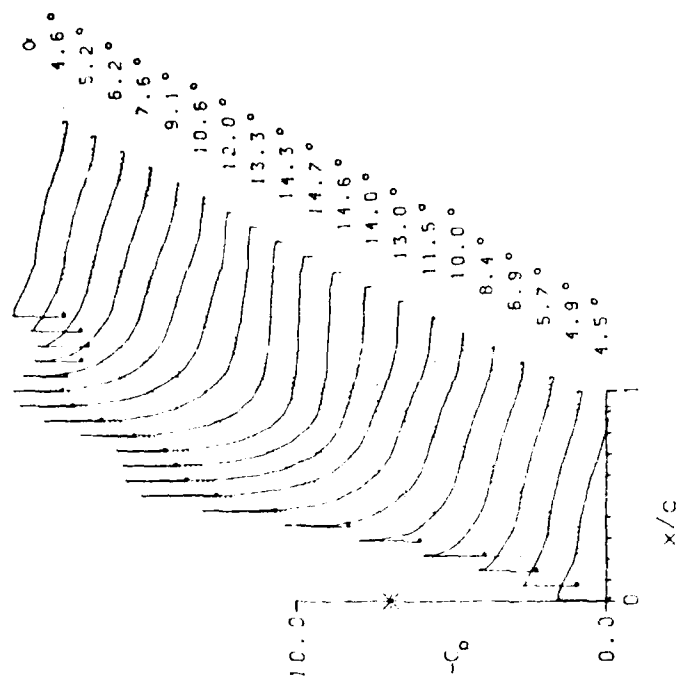
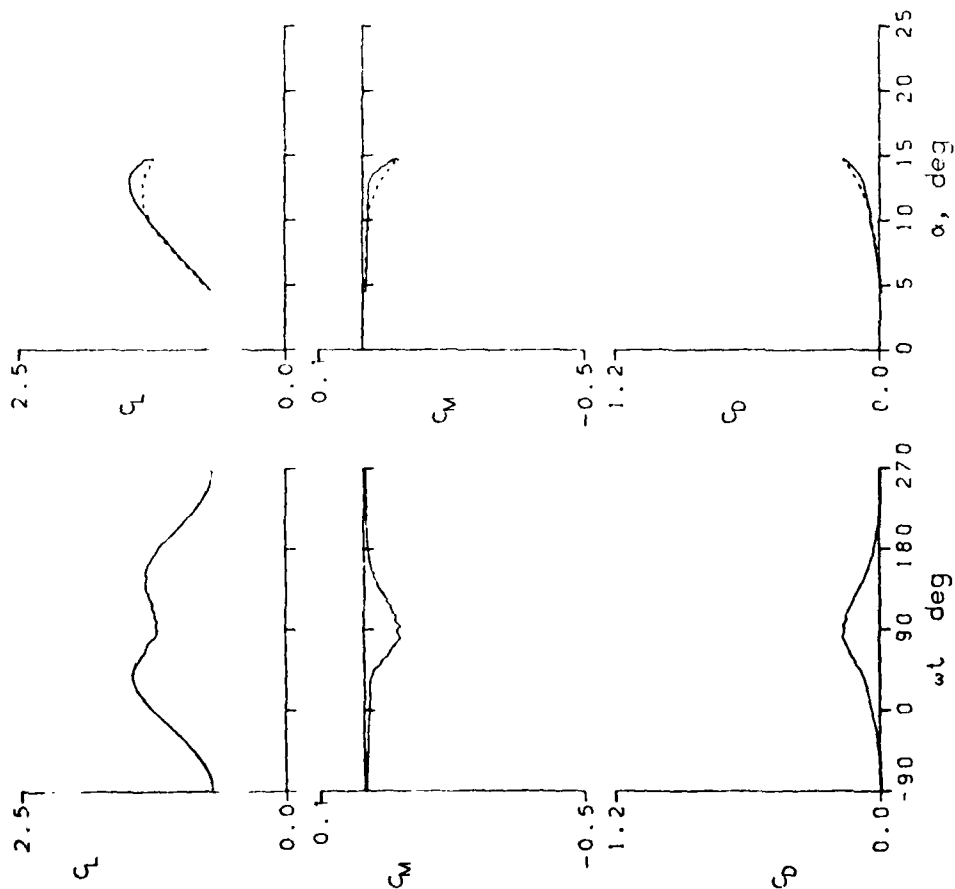


Figure 16.- Continued.

HUGHES HM-02 - WITH TAB - AIRFOIL

FRAME : 44021 $A_0 = 9.92^\circ$ $k = 0.025$

$R_0 = 3.95 \text{ E6}$ $A_1 = 4.91^\circ$ $M = 0.302$

$C_{Lmax} = 1.53$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.18$

$\alpha_{Lmax} = 13.4^\circ$ $\zeta = -0.010$ $M_{max} = 1.21$

$\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 8.9$ $\alpha_{Mmax} = 13.8^\circ$

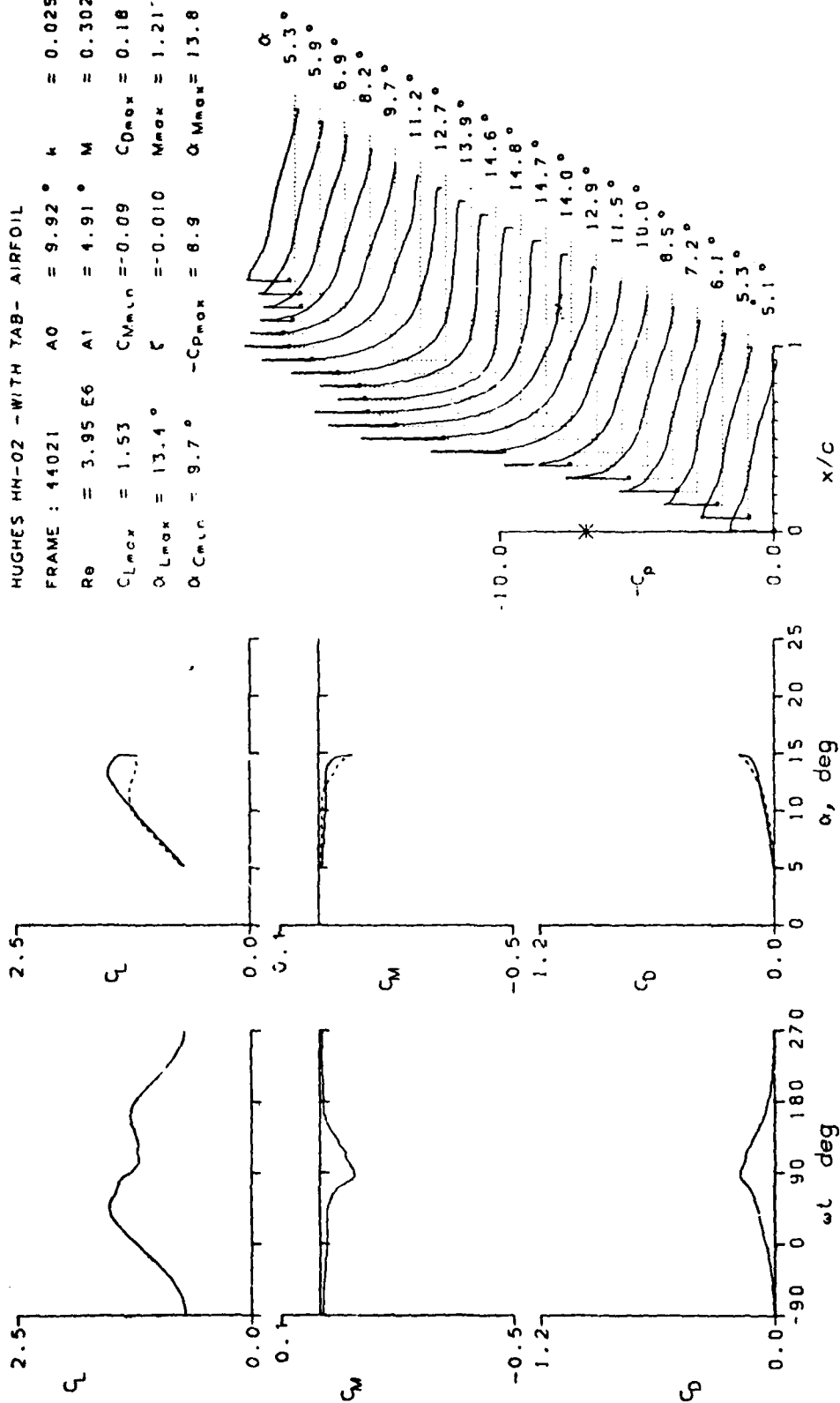


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 44023 $A_0 = 9.90^\circ$ $k = 0.050$

$Re = 3.94 \times 10^6$ $A^* = 4.92^\circ$ $M = 0.302$

$C_{Lmax} = 1.58$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.19$

$\alpha_{Lmax} = 13.6^\circ$ $\xi = 0.081$ $V_{max} = 1.115$

$\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 8.9$ $\alpha_{Mmax} = 13.5^\circ$

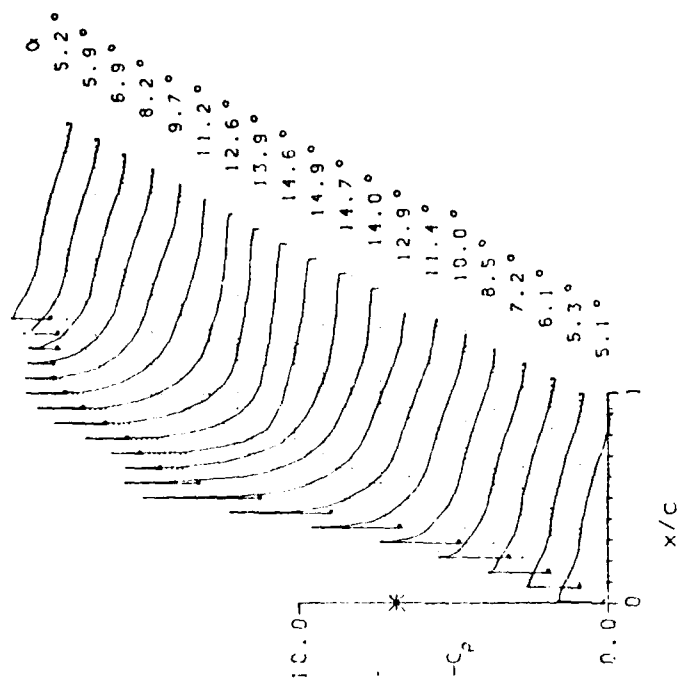
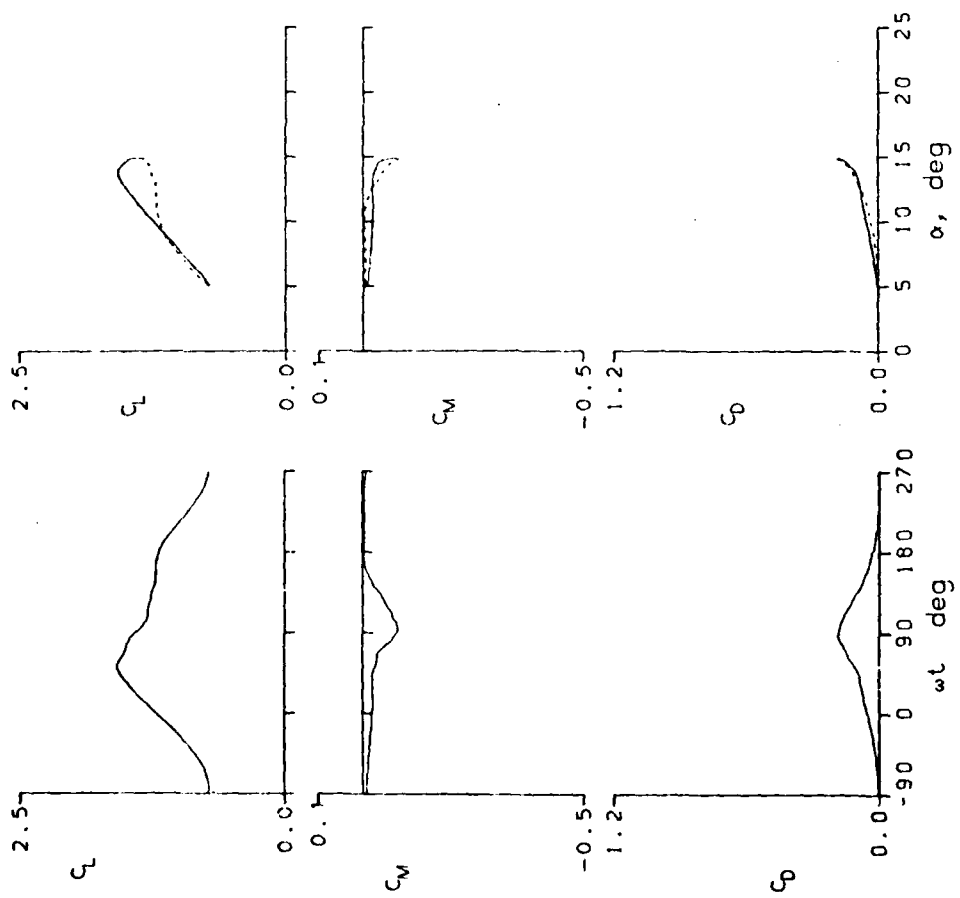


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 44104 $A_0 = 9.90^\circ$ $k = 0.099$
 $Re = 4.00 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.303$
 $C_{Lmax} = 1.65$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.25$
 $\alpha_{Lmax} = 14.9^\circ$ $\xi = 0.104$ $M_{max} = 1.225$
 $\alpha_{C_{Lmin}} = 9.6^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 13.8^\circ$

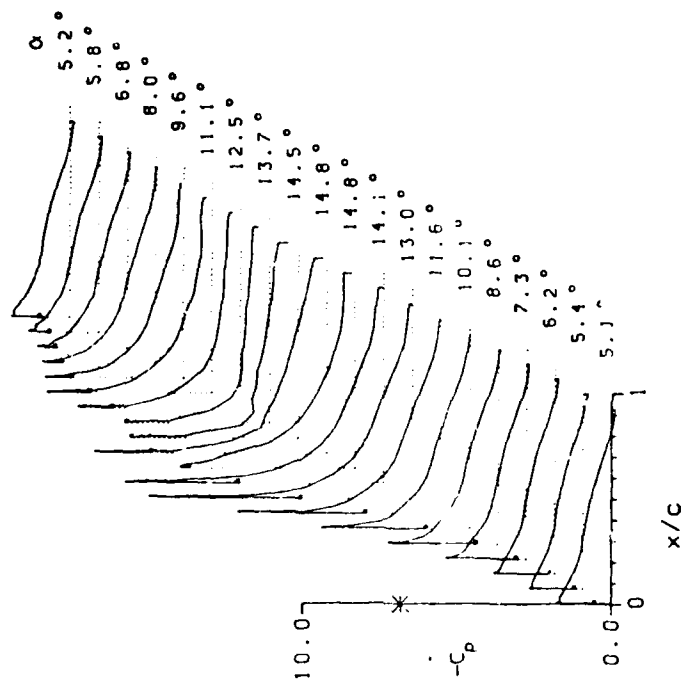
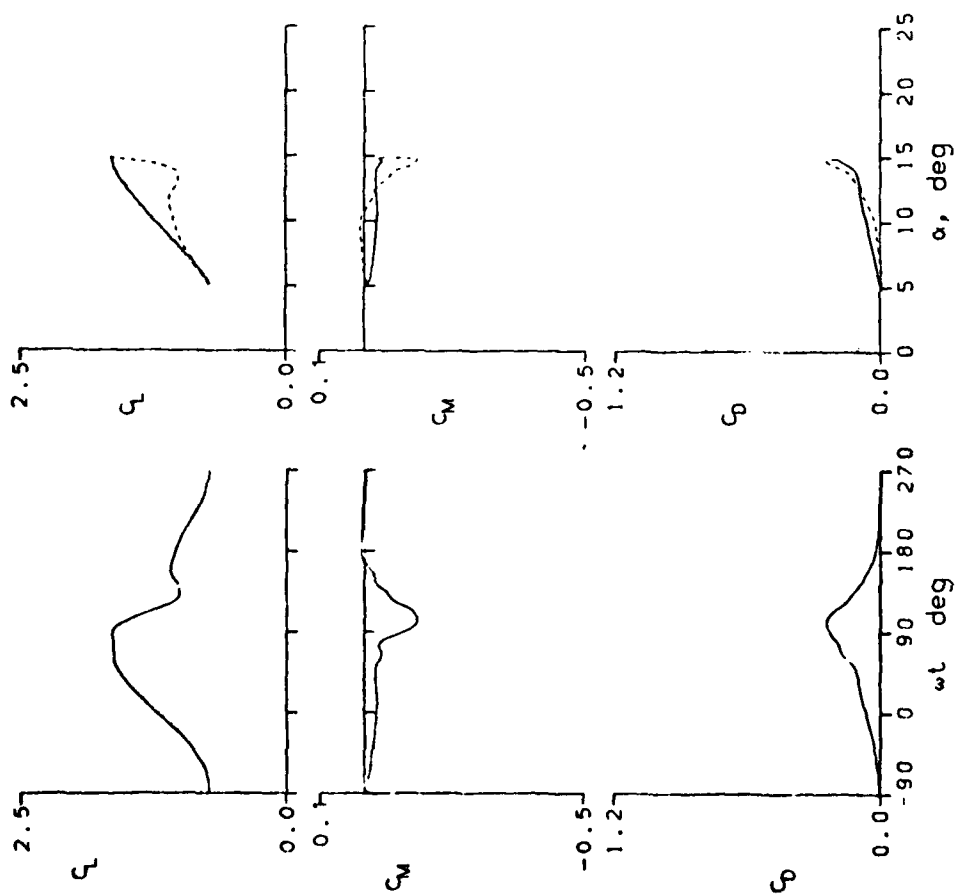


Figure 16.- Continued.

HUGHES HM-02 -WITH TAB- AIRFOIL

FRAME : 44112	A0 = 9.85°	k = 0.199
Re = 4.00 E6	A1 = 4.90°	M = 0.303
C _{Lmax} = 1.84	C _{Mmin} = -0.21	C _{Dmax} = 0.32
α _{Lmax} = 14.9°	ξ = -0.010	M _{acc} = 1.221
α _{Cmin} = 9.6°	-C _{pmax} = 8.9	α _{Mmax} = 14.0°

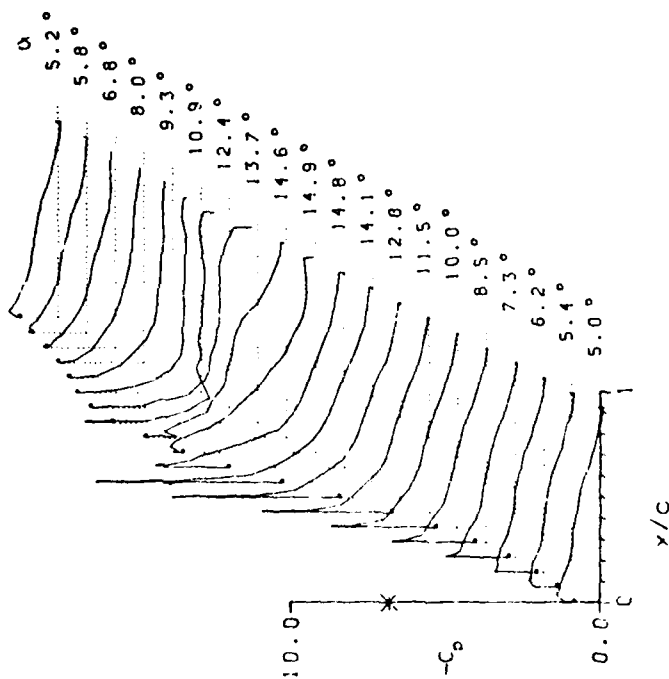
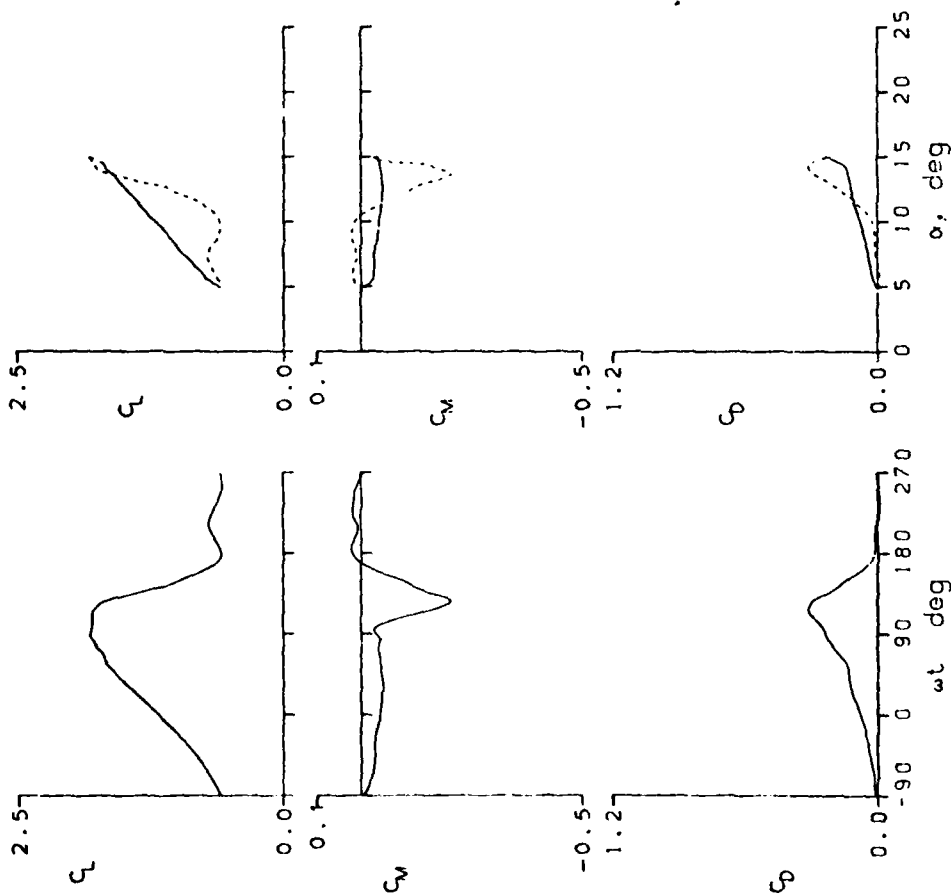


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 44118 $\alpha_0 = 9.89^\circ$ $k = 0.100$
 $Re = 4.04 \text{ E}6$ $\Delta t = 4.89^\circ$ $M = 0.302$
 $C_{Lmax} = 1.67$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.24$
 $\alpha_{Lmax} = 14.9^\circ$ $\zeta = 0.179$ $M_{max} = 1.241$
 $\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 9.2$ $\alpha_{Mmax} = 13.8^\circ$

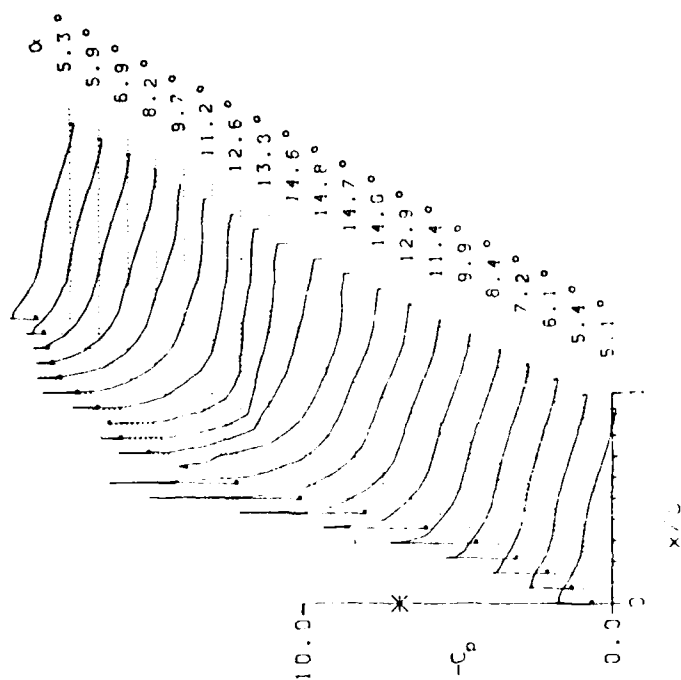
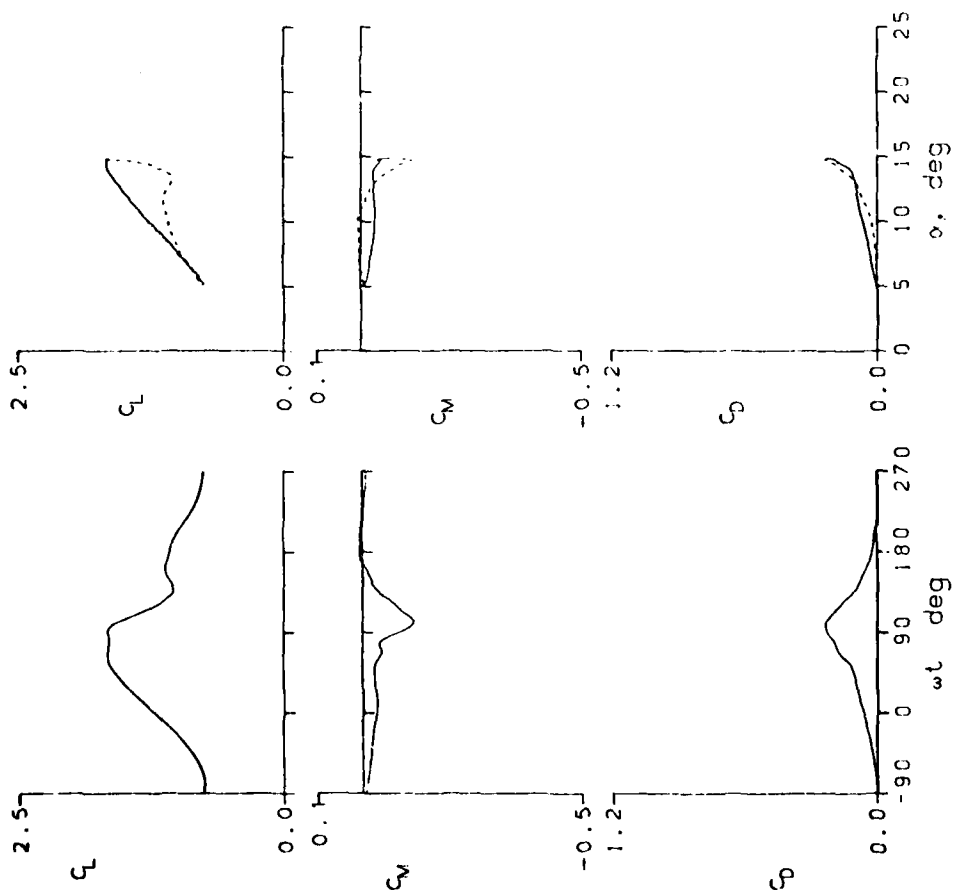


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 44119 $A_0 = 9.89^\circ$ $k = 0.025$
 $Re = 4.02 \text{ E } 6$ $A_1 = 4.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.55$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.19$
 $\alpha_{Lmax} = 13.2^\circ$ $\xi = 0.000$ $M_{max} = 1.229$
 $\alpha_{Cmin} = 9.6^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 13.8^\circ$

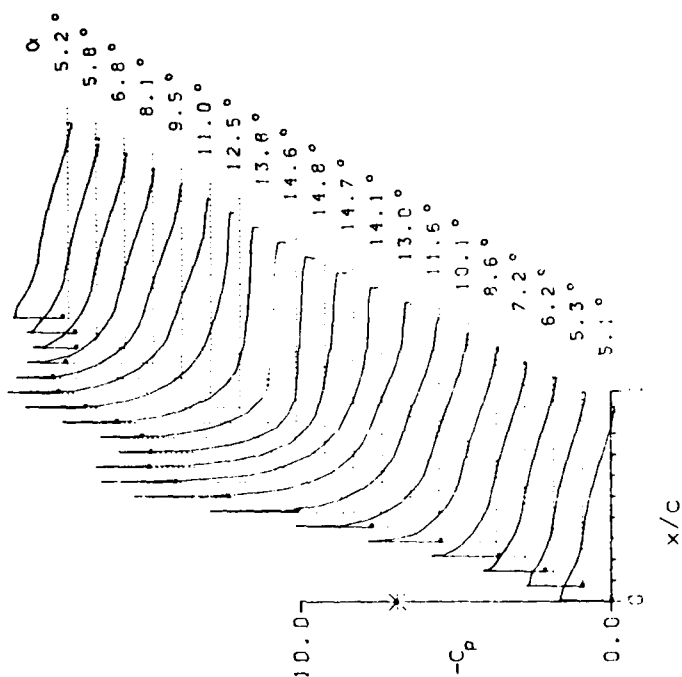
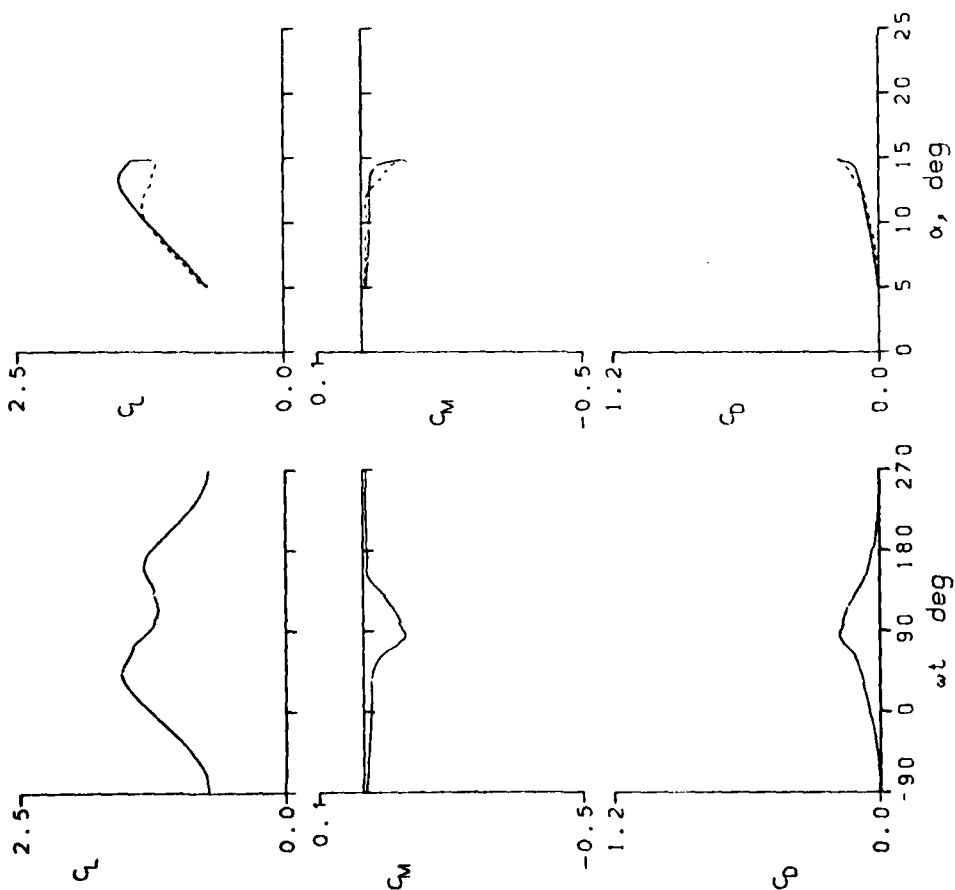


Figure 16.- Continued.

HUGHES HM-02 - WITH TAB- AIRFOIL
 FRAME : 44120 $A_0 = 9.84^\circ$ $k = 0.200$
 $Re = 4.01 E6$ $A' = 4.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.86$ $C_{Mmin} = -0.21$ $C_{Dmax} = 0.33$
 $\alpha_{Lmax} = 14.9^\circ$ $\zeta = 0.055$ $M_{max} = 1.228$
 $\alpha_{Cmin} = 9.6^\circ$ $-C_{Pmax} = 9.1$ $\alpha_{Mmax} = 14.0^\circ$

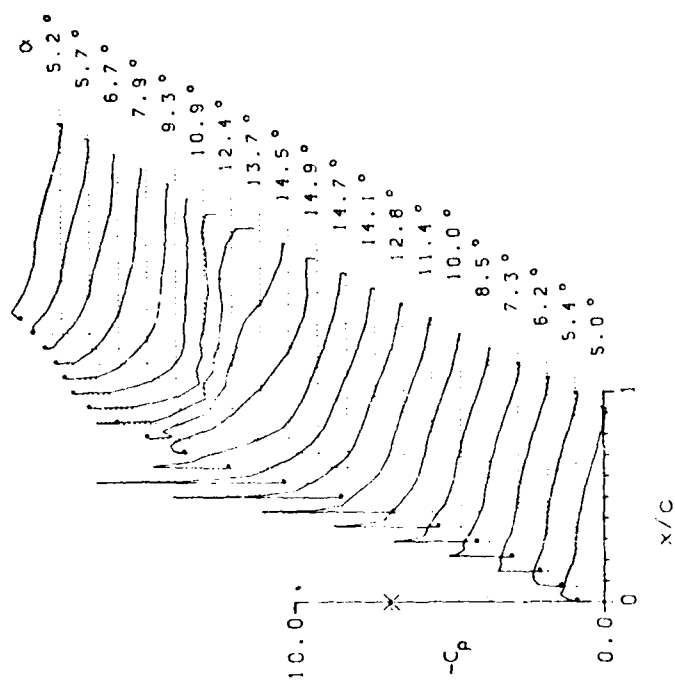
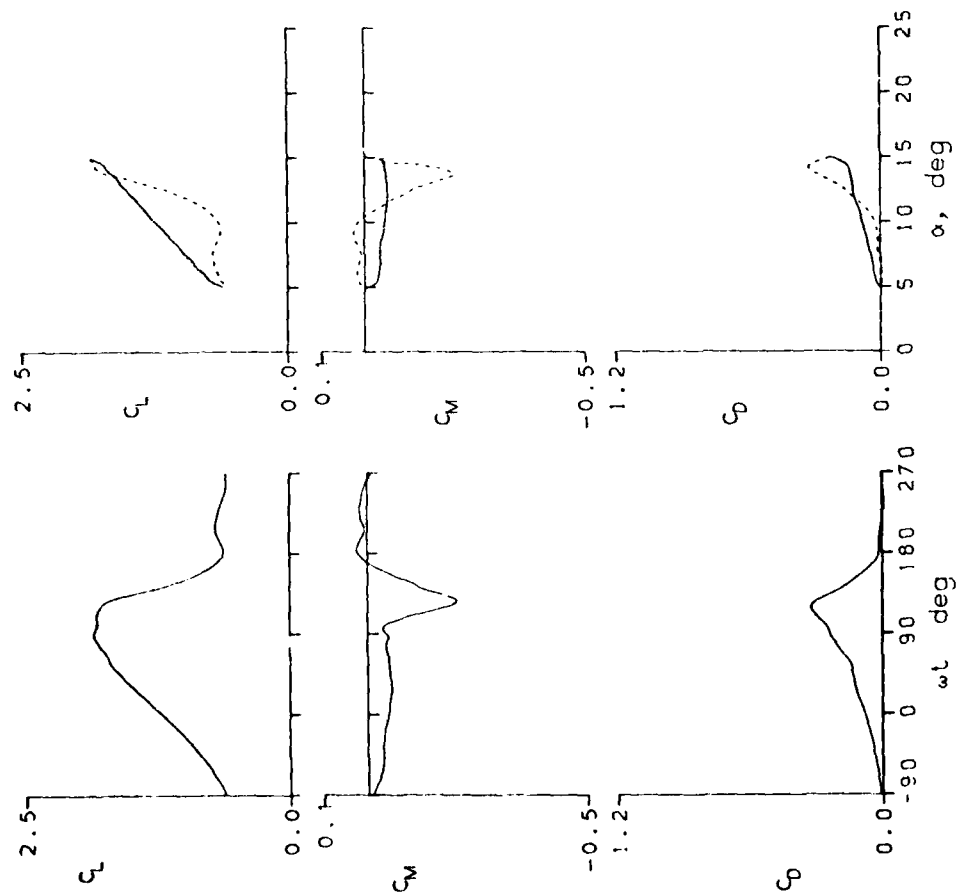


Figure 16.- Continued.

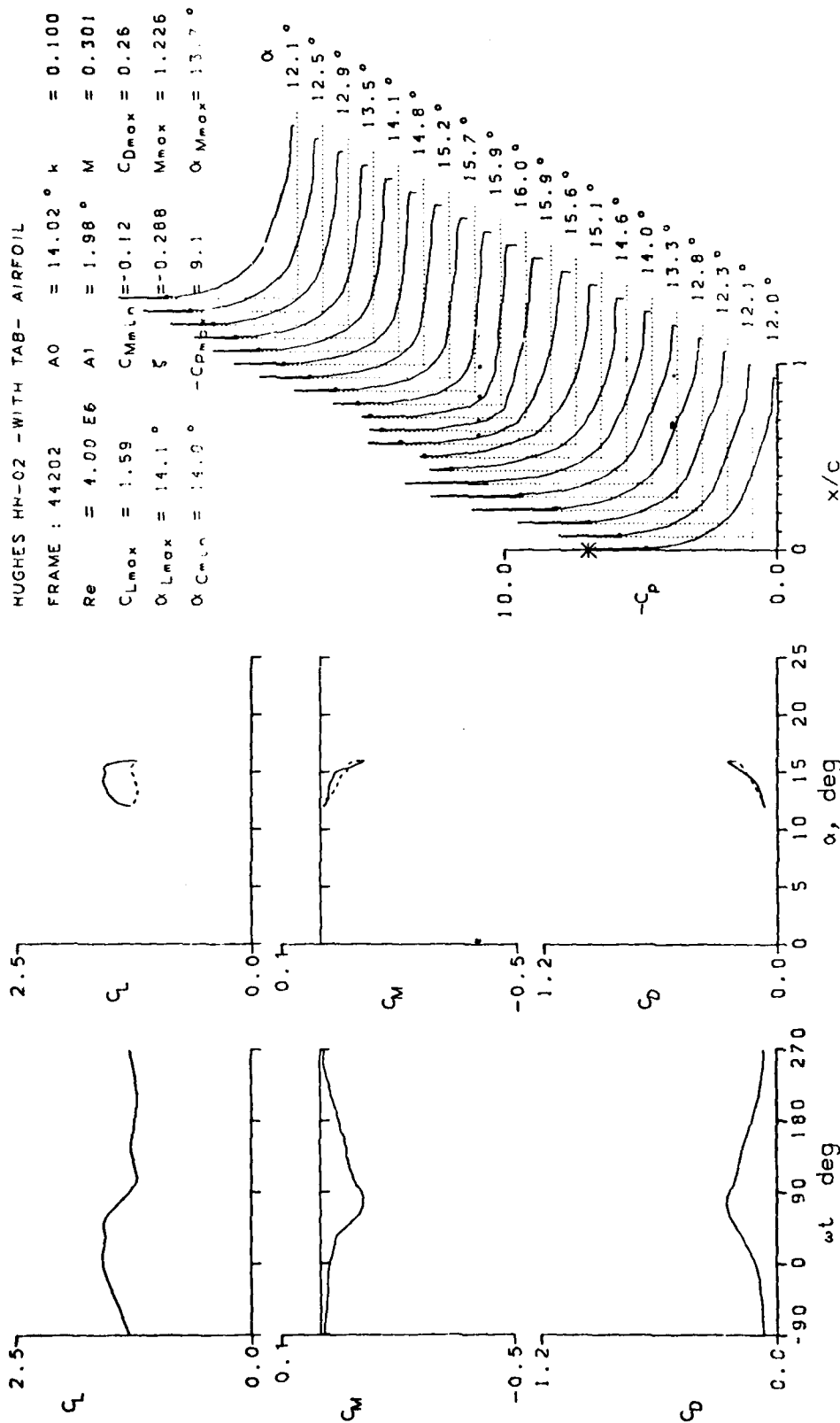


Figure 16.- Continued.

HUGHES HM-02 - WITH TAB- AIRFOIL
 FRAME : 44234 A0 = 13.95° k = 0.200
 Re = 3.99 E6 A1 = 1.99° M = 0.301
 CLmax = 1.88 CMmin = -0.23 CDmax = 0.41
 αLmax = 16.0° ξ = -0.657 Mmax = 1.221
 αCMmin = 13.9° -CDmax = 9.1 αMmax = 14.4°

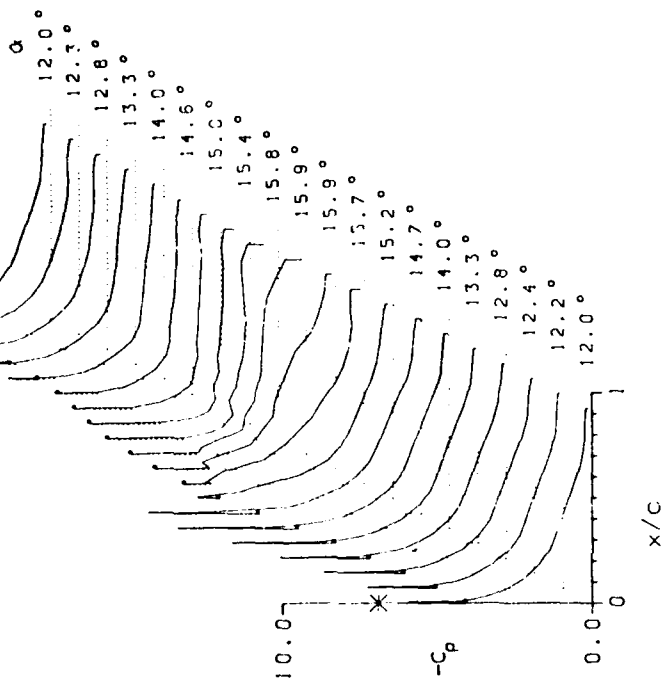
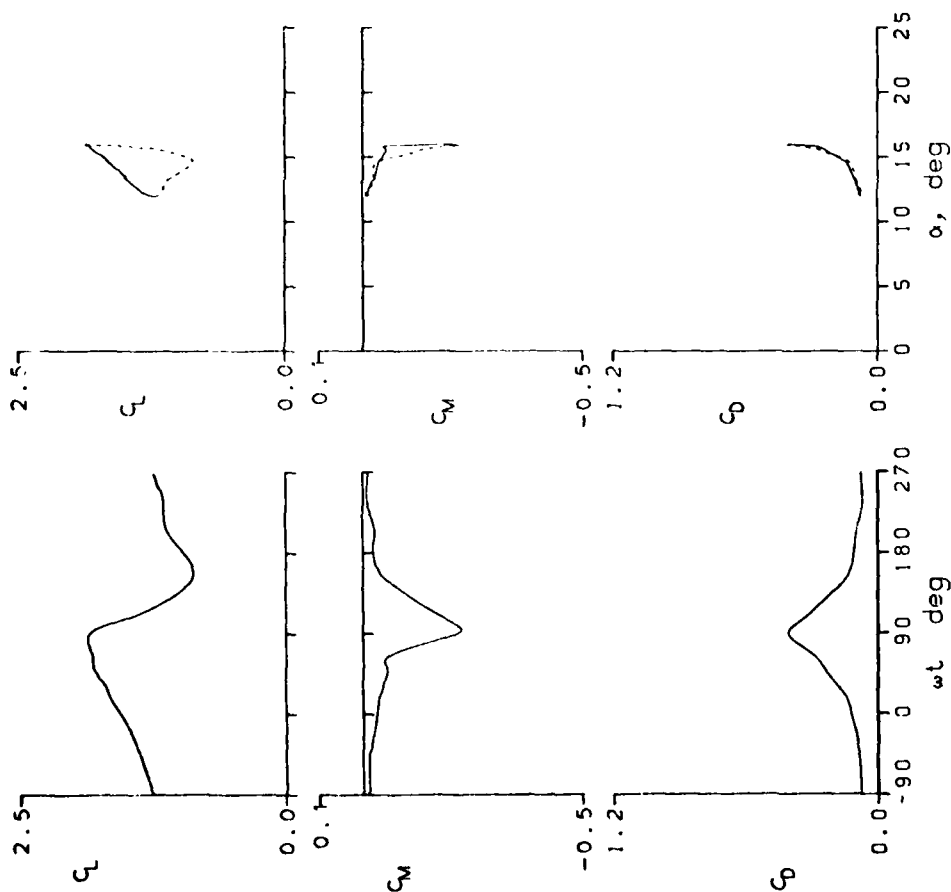


Figure 16.- Continued.

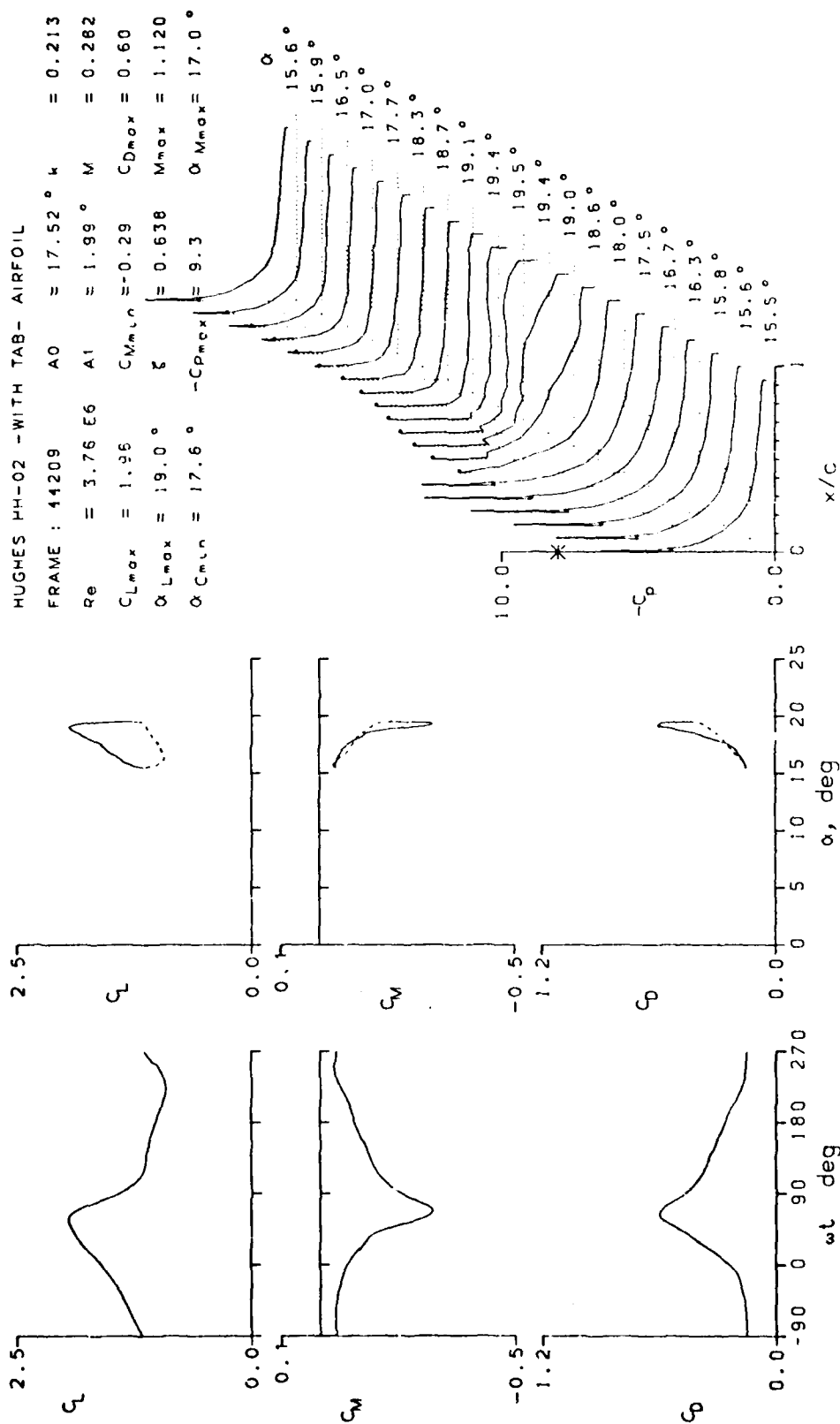


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 14212 $\alpha_0 = 15.47^\circ$ $\mu = 0.010$
 $Re = 3.95 \text{ E}6$ $A1 = 1.99^\circ$ $M = 0.297$
 $C_{Lmax} = 1.45$ $C_{Mmax} = -0.10$ $CDmax = 0.23$
 $\alpha_{Lmax} = 13.6^\circ$ $C = 0.256$ $Mmax = 1.166$
 $\alpha_{Cmin} = 15.3^\circ$ $-CDmax = 8.8$ $\alpha_{Mmax} = 13.6^\circ$

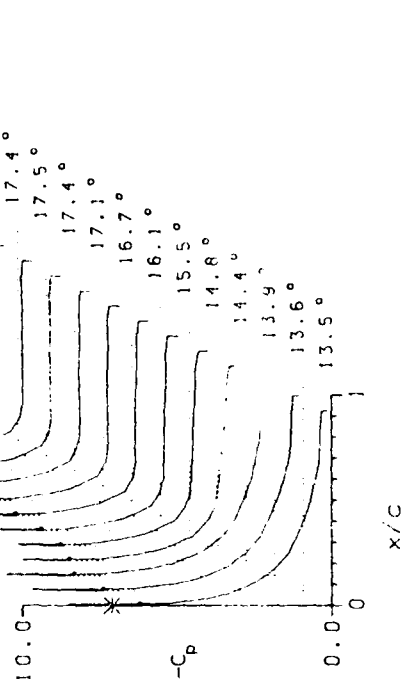
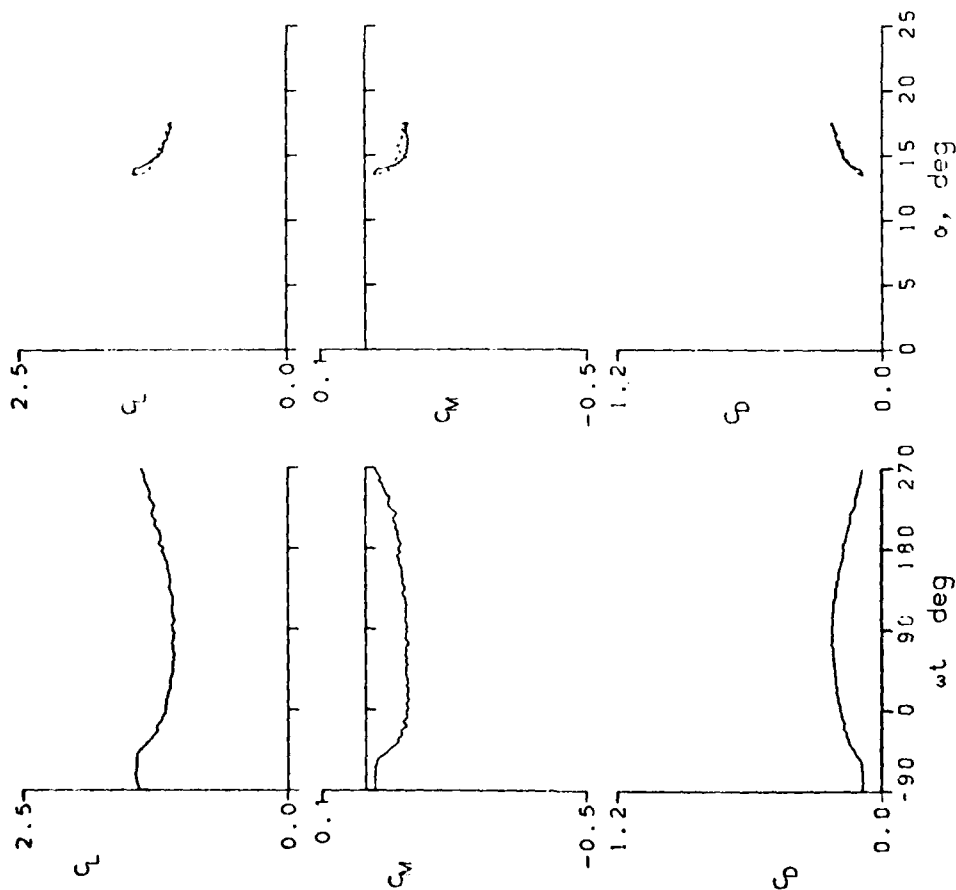


Figure 16.- Continued.

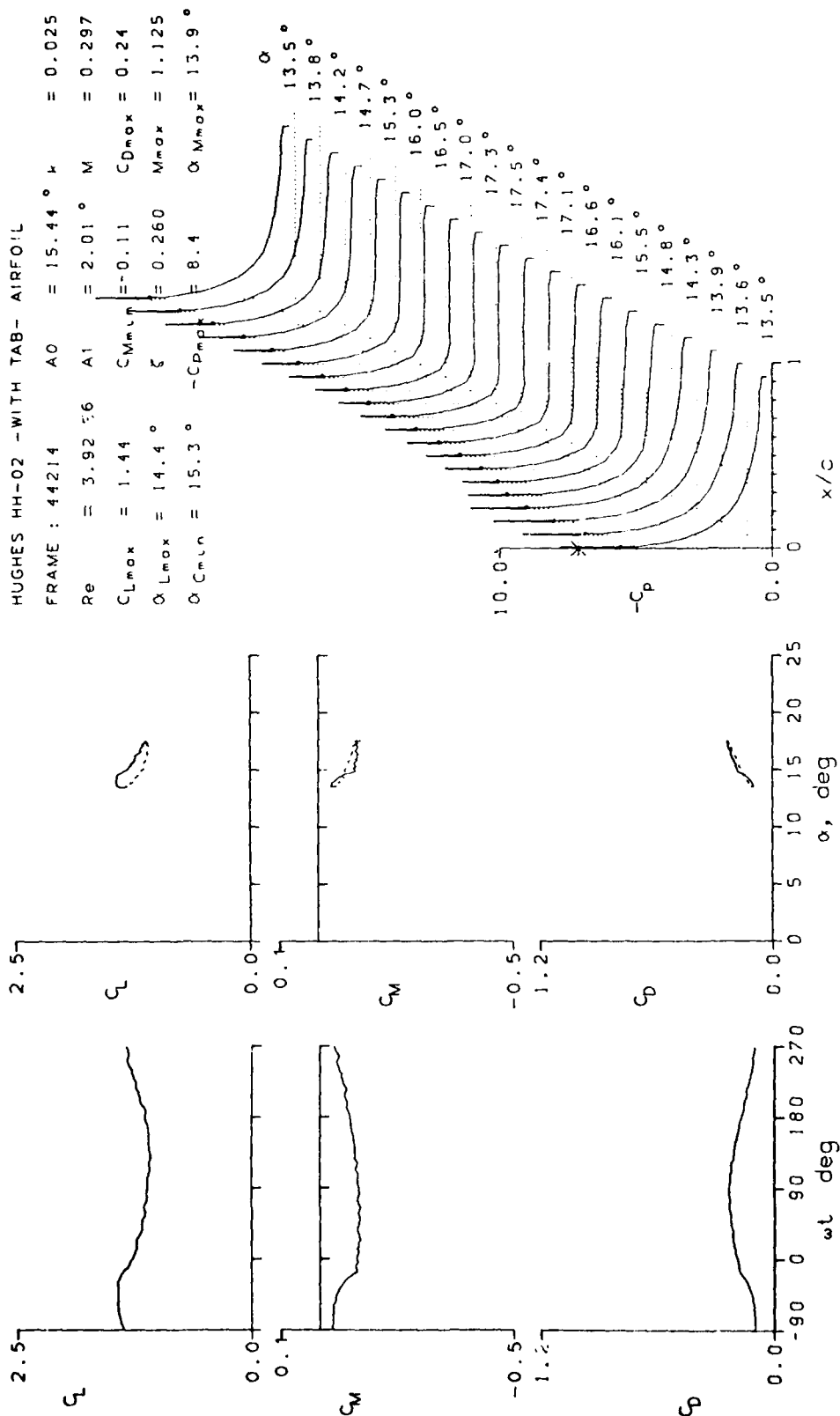


Figure 16.- Continued.

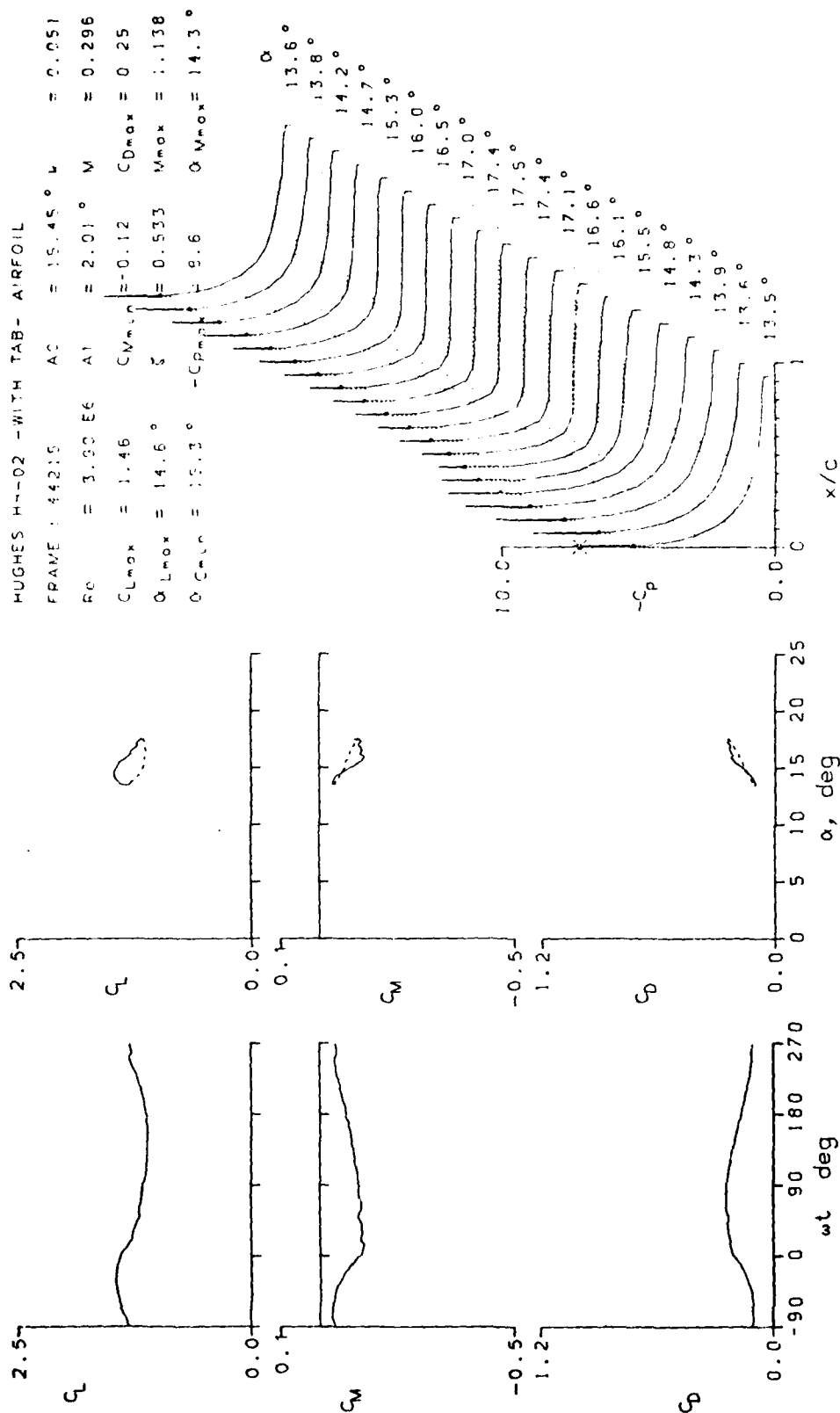


Figure 16.- Continued.

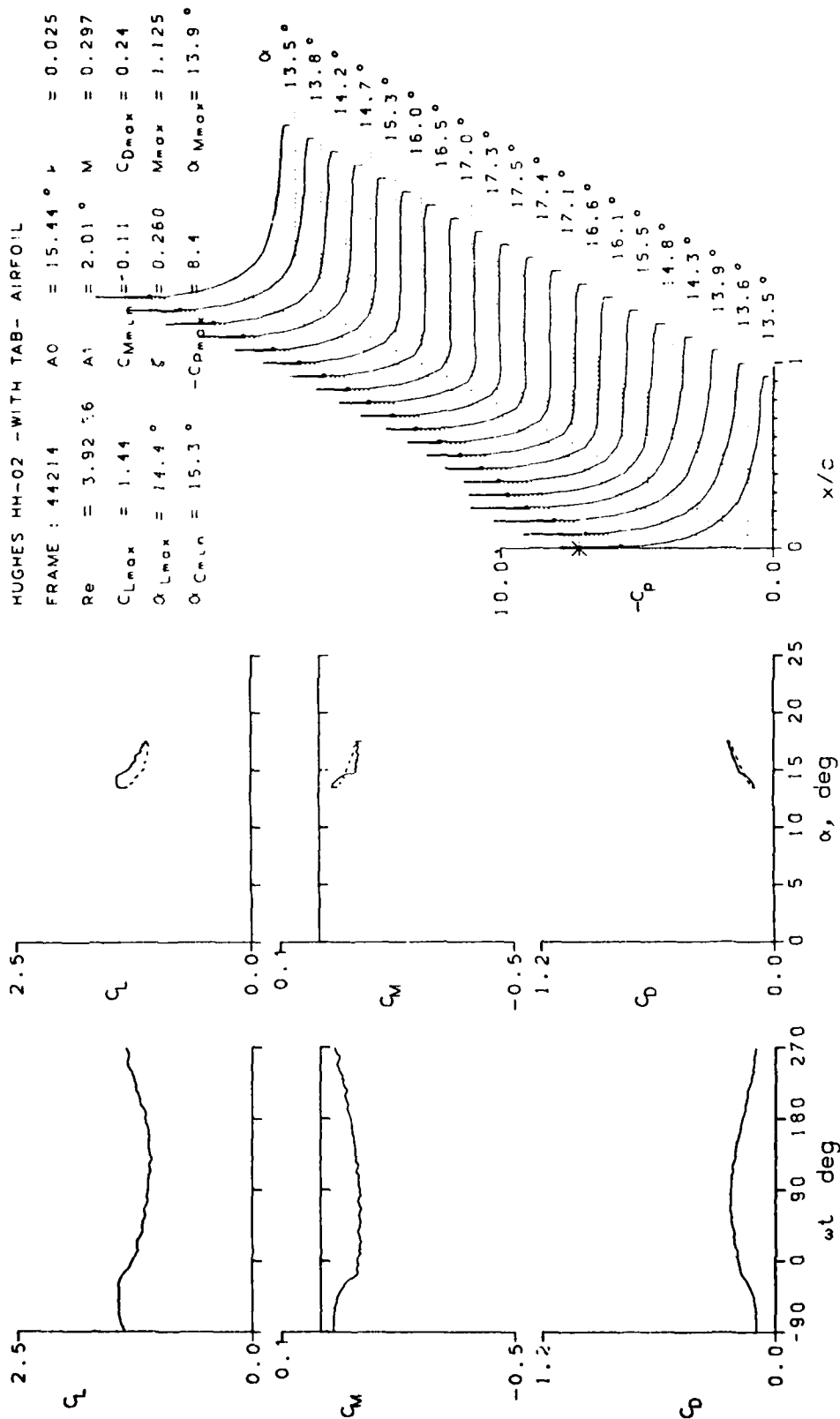


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 44216 A0 = 15.43° k = 0.102
 Re = 3.85 E6 A1 = 2.01° M = 0.293
 $C_{Lmax} = 1.63$ $C_{Mmax} = -0.15$ $C_{Dmax} = 0.32$
 $\alpha_{Lmax} = 16.2^\circ$ $\xi = 0.360$ $M_{max} = 1.164$
 $\alpha_{Cmin} = 15.3^\circ$ $-C_{Dcrit} = 9.0$ $\alpha_{Mmax} = 14.6^\circ$

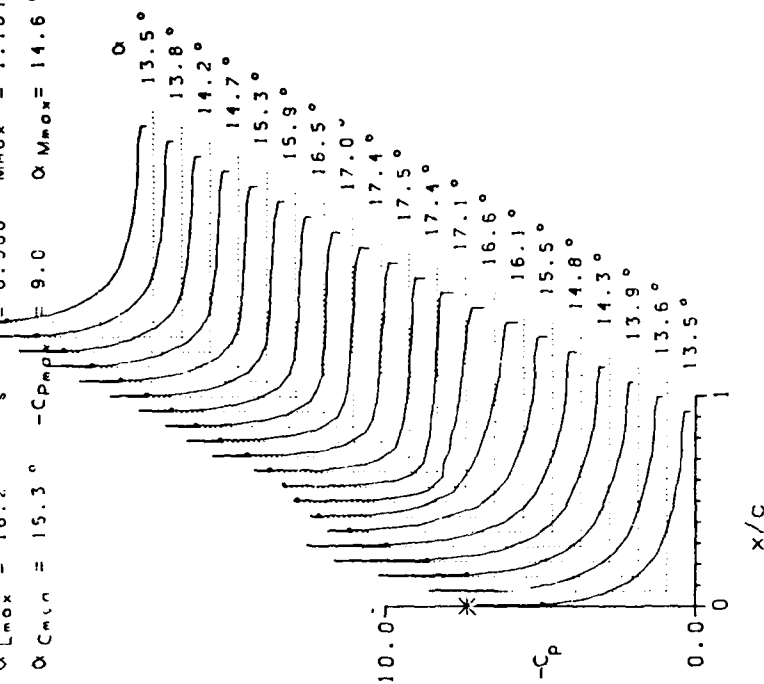
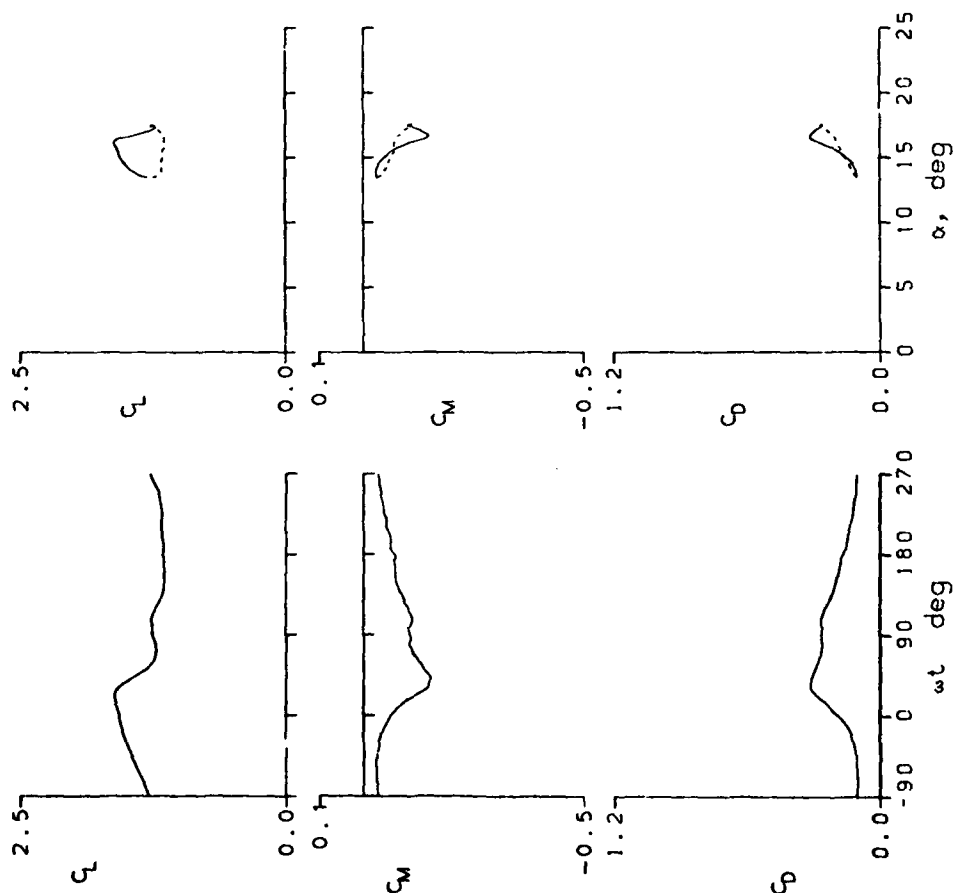


Figure 16.- Continued.

HUGHES HH-02 -WITH TAB- AIRFOIL
 FRAME : 44217 $A_0 = 15.44^\circ$ $k = 0.154$
 $Re = 3.83 \text{ E}6$ $A_1 = 2.01^\circ$ $M = 0.291$
 $C_{L_{max}} = 1.77$ $C_{M_{min}} = -0.20$ $C_{D_{max}} = 0.39$
 $\alpha_{L_{max}} = 15.7^\circ$ $\xi = 0.326$ $M_{max} = 1.170$
 $\alpha_{C_{L_{min}}} = 15.3^\circ$ $-C_{D_{min}} = 9.2$ $\alpha_{M_{max}} = 14.8^\circ$

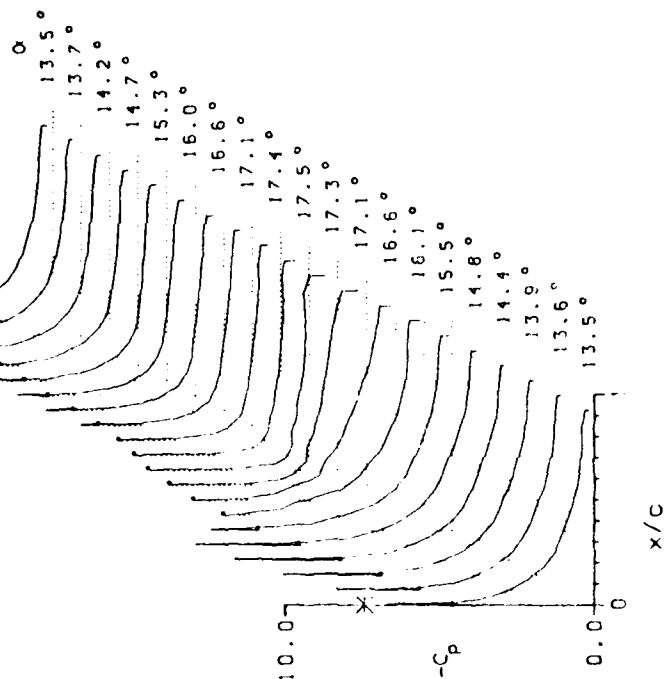
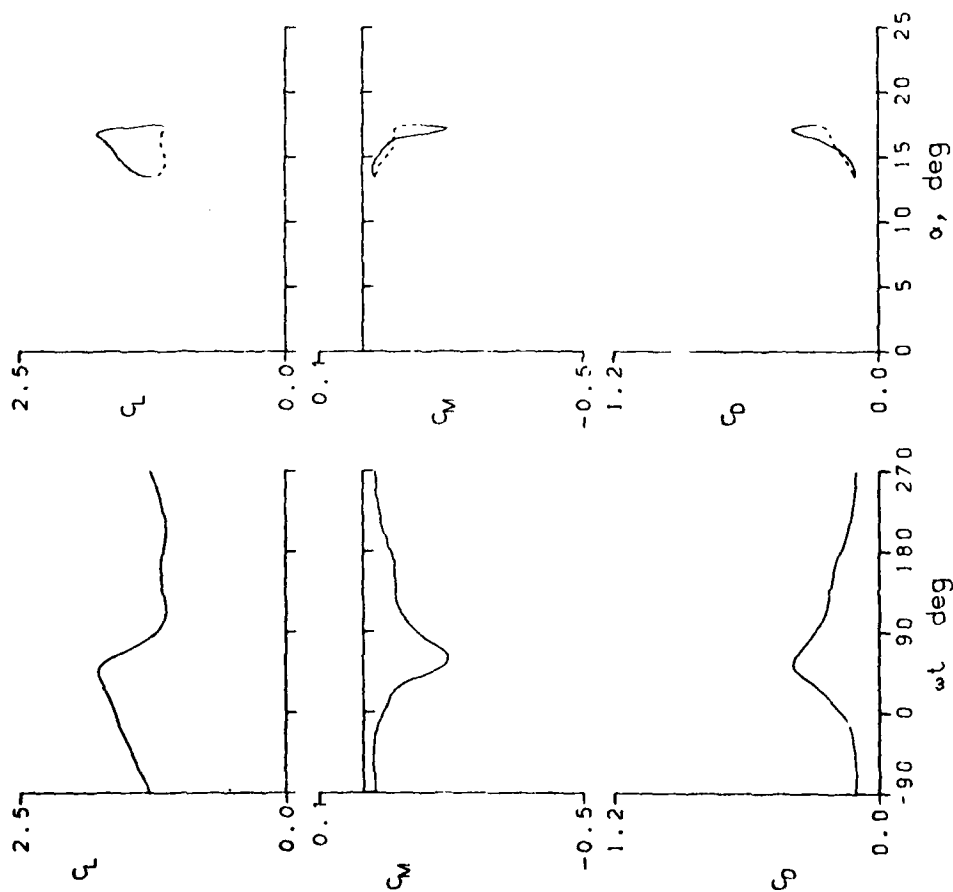


Figure 16.- Continued.

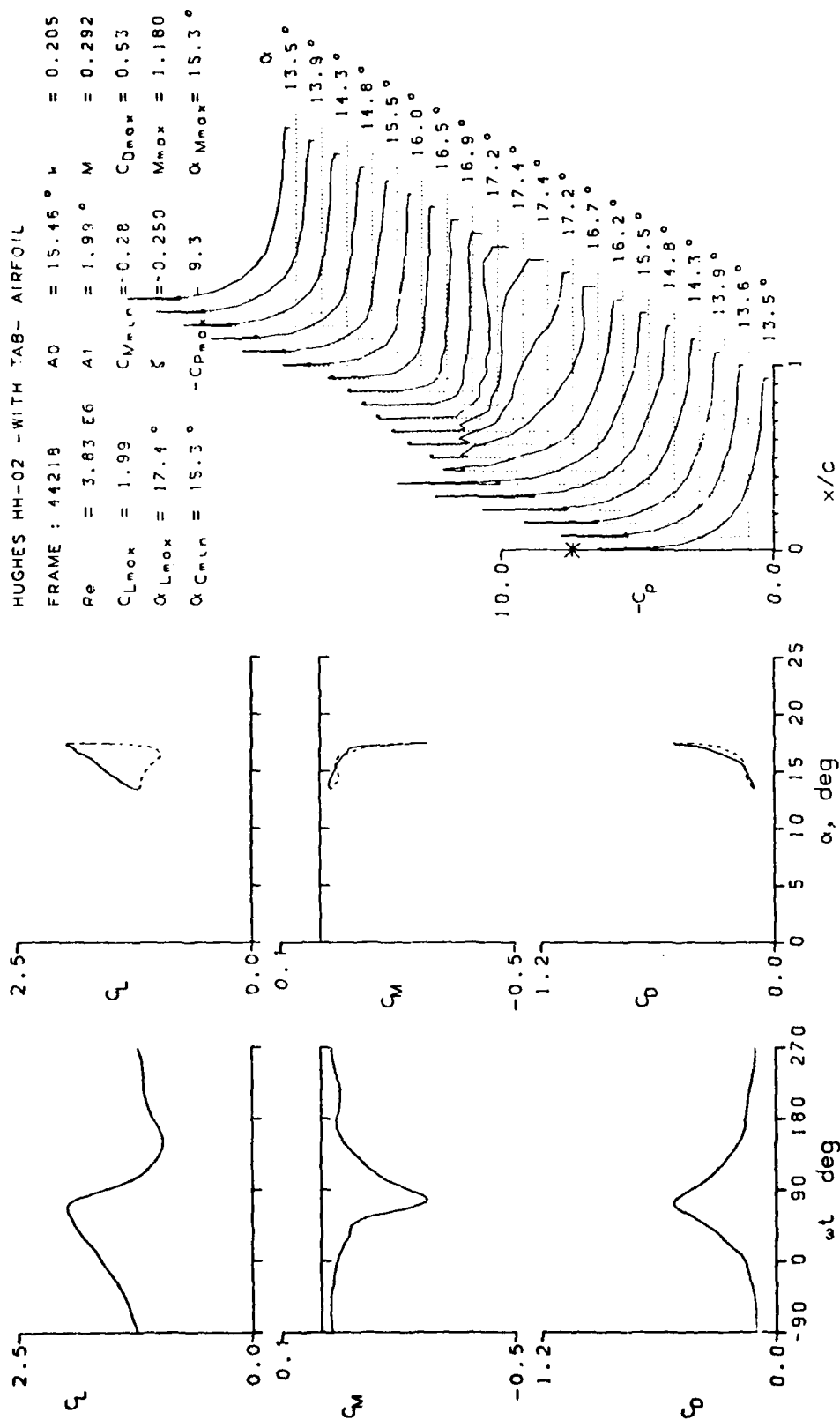


Figure 16.- Continued.

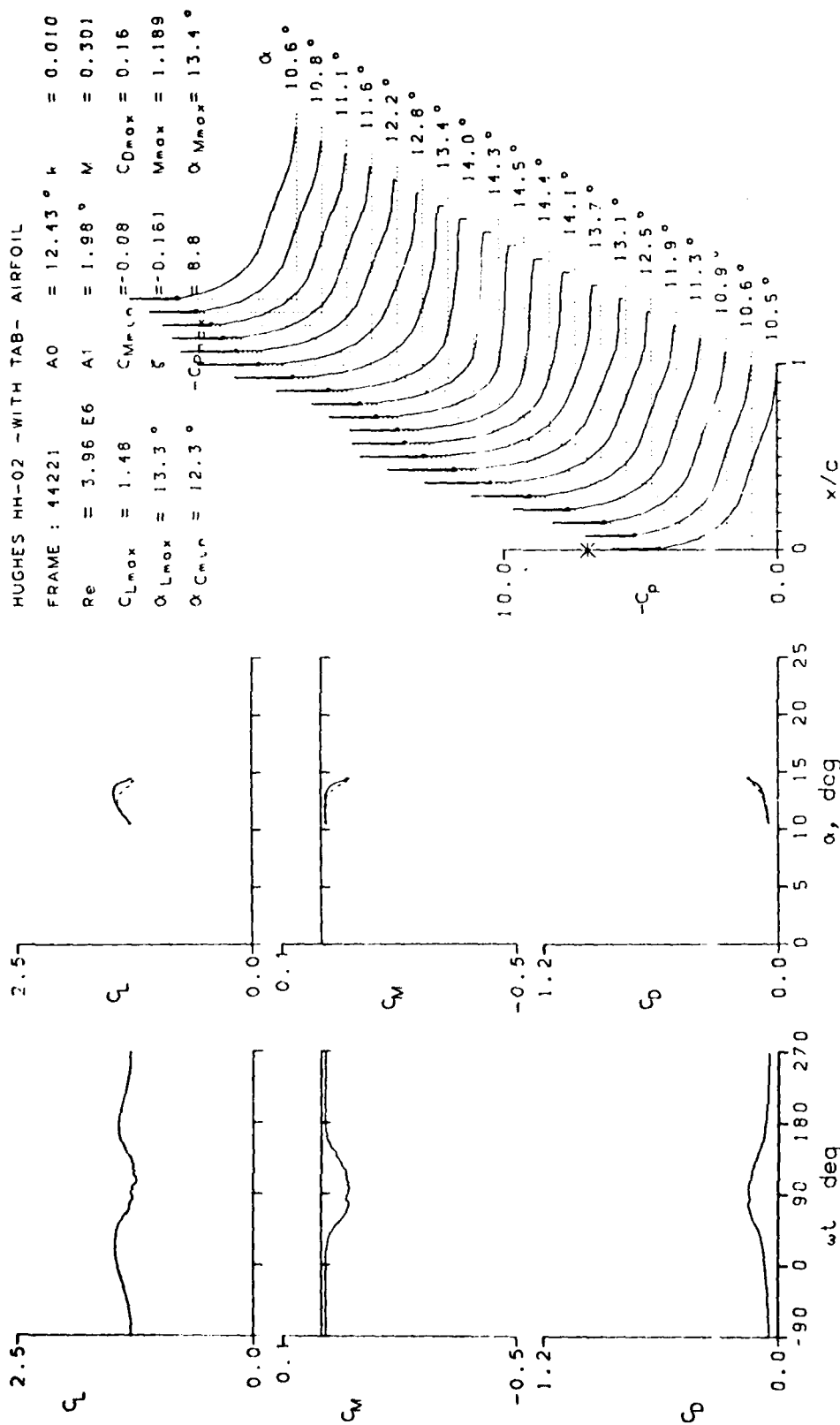


Figure 16.- Continued.

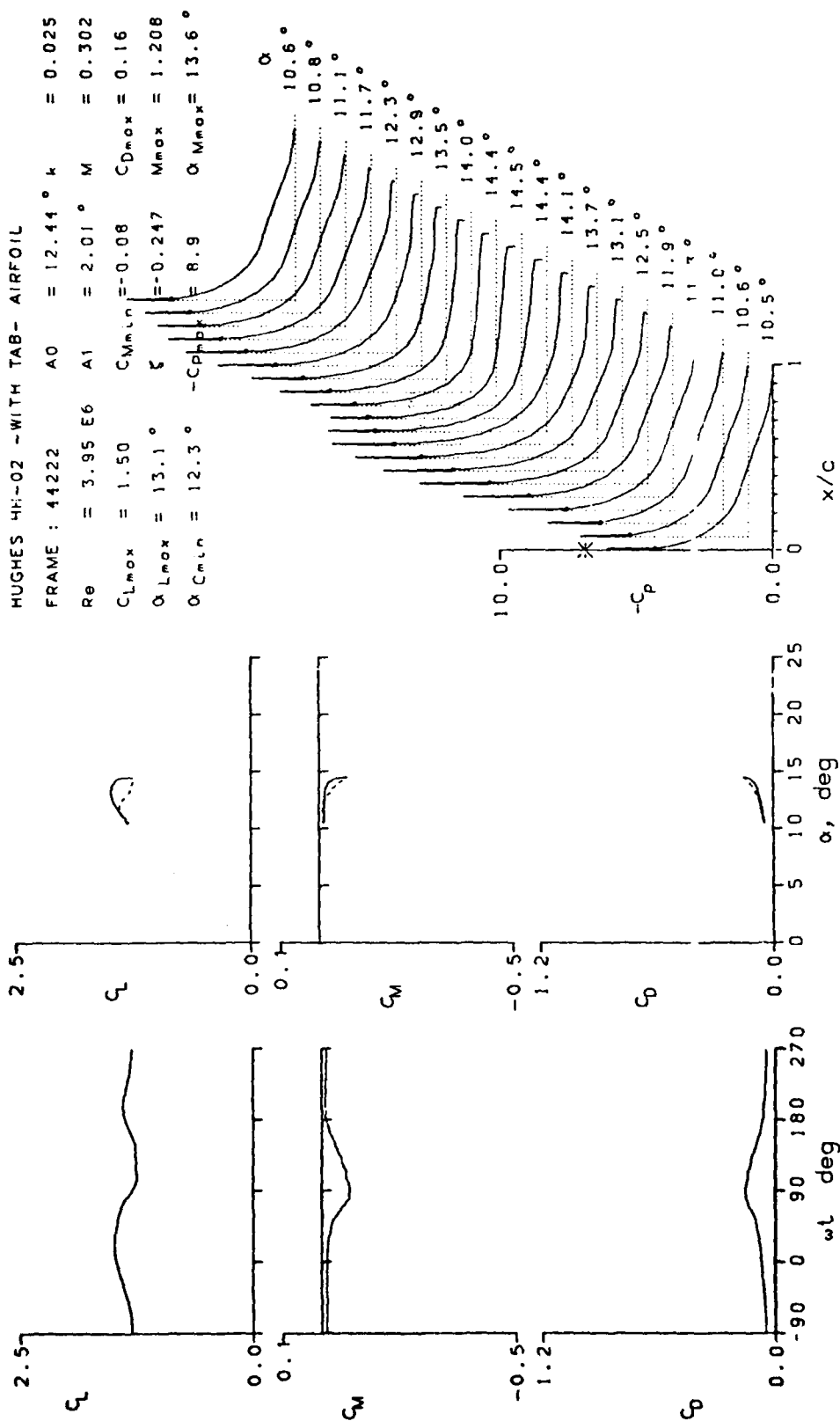
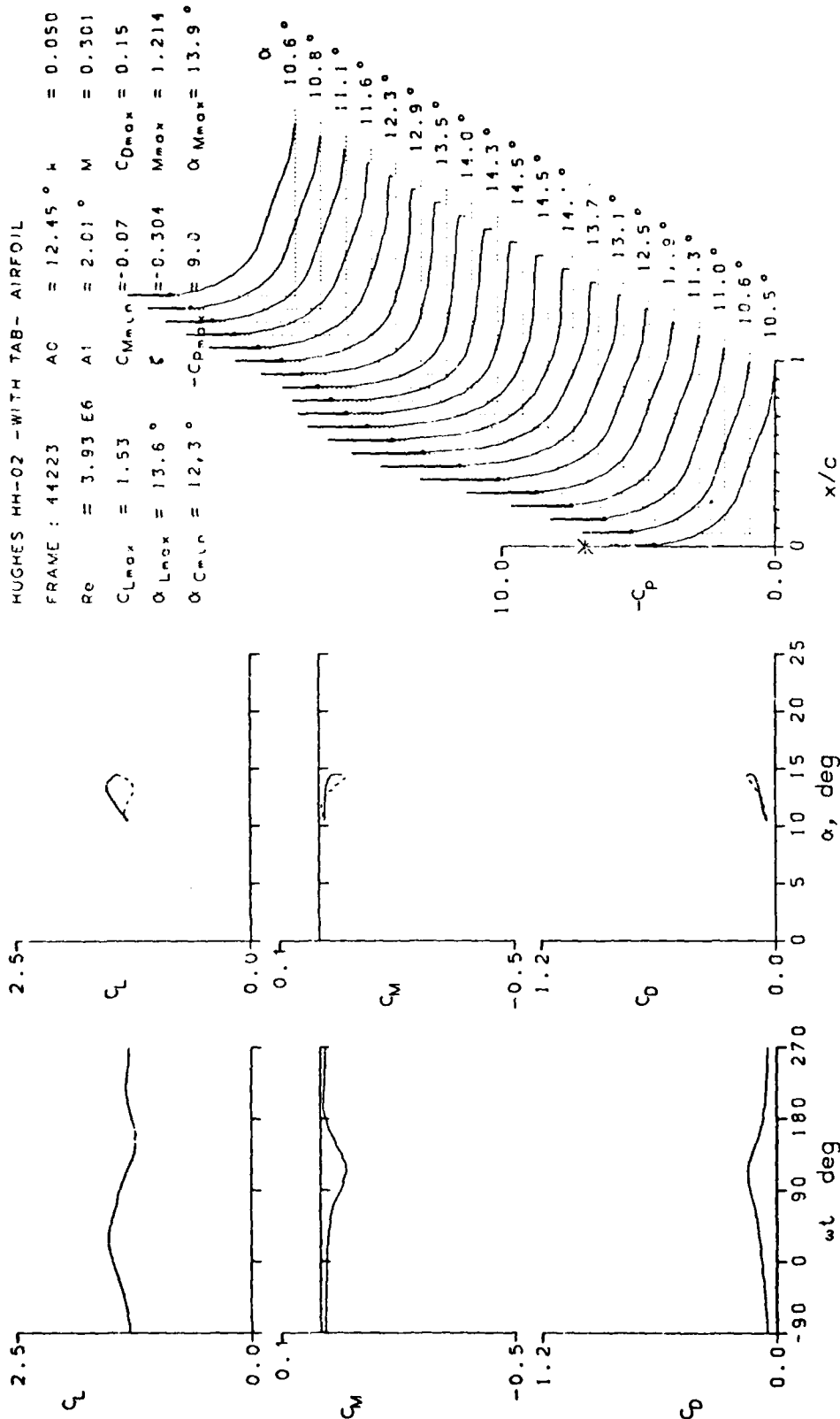


Figure 16.- Continued.

HUGHES HH-02 - WITH TAB- AIRFOIL

FRAME : 44233	AC	= 12.45 °	k	= 0.050	
Re	= 3.93 E6	A1	= 2.01 °	M	= 0.301
CLmax	= 1.53	CMmin	= -0.07	CDmax	= 0.15
OLmax	= 13.6 °	ε	= -0.304	Mmax	= 1.214
OCmin	= 12.3 °	-Cpbk	= 9.3	α Mmax	= 13.9 °



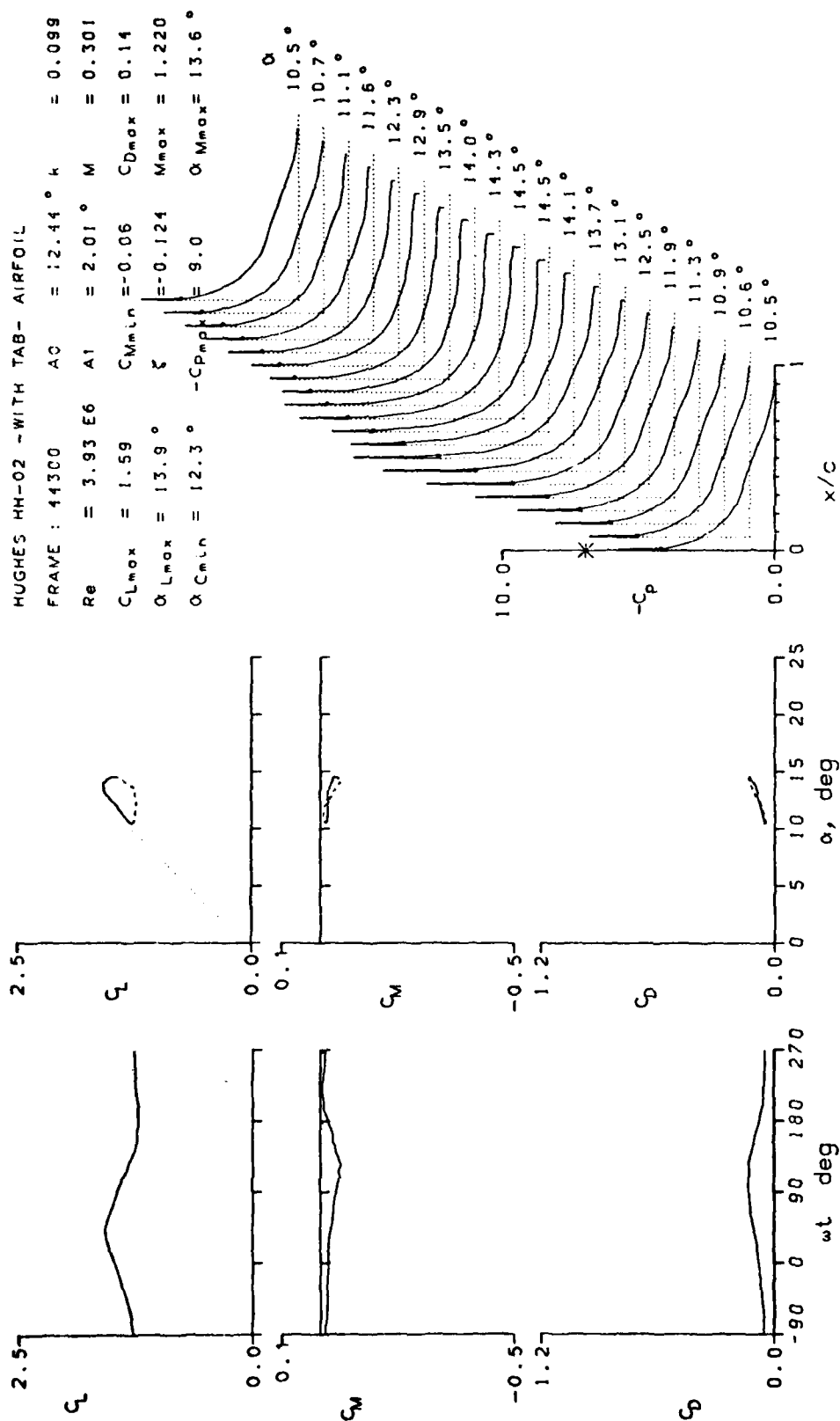
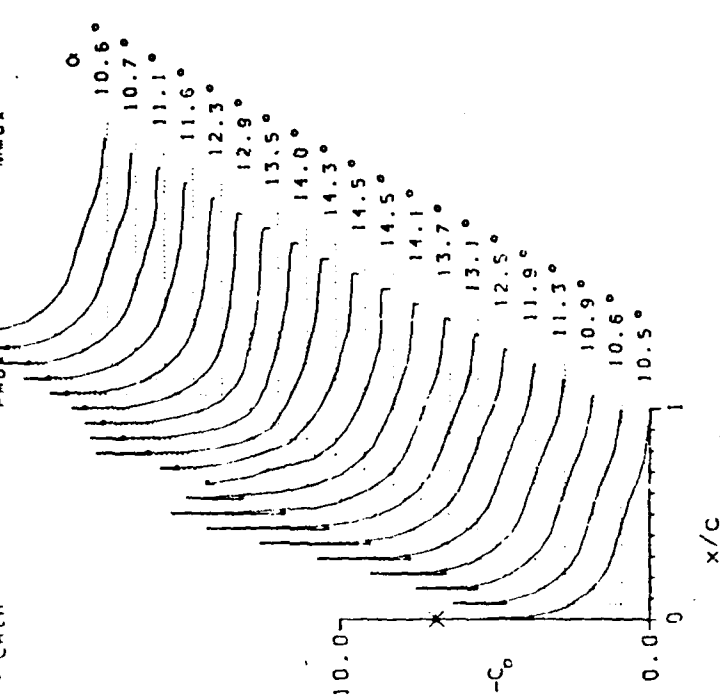


Figure 16.- Continued.

FRAME : 44303	AO = 12.43°	M = 0.149
Rc = 3.95 EG	A: = 2.01°	M = 0.302
CLmax = 1.61	CMmax = -0.07	CDmax = 0.17
Q Lmax = 14.0°	ξ = -0.194	Mmax = 1.221
Q Cmax = 12.3°	-CDmax = 9.6	Q Mmax = 13.6°

$$\text{Re} = 3.95 \text{ Eg} \quad \Delta' = 2.01^\circ \quad M = 0.302$$
$$C_{\text{Mg}^{2+}} = 1.61 \quad C_{\text{Mg}^{2+}} = -0.07 \quad C_{\text{Mg}^{2+}} = 0.17$$
 $\alpha_{\text{max}} = 14.0^\circ \quad \zeta = -0.194 \quad M_{\text{max}} = 1.221$
$$\alpha_{C_{60}} = 12.3^\circ \quad -C_{60} = 9.6^\circ \quad \alpha_{M_{60}} = 13.6^\circ$$


HUGHES HH-02 -WITH TAB- AIRFOIL

FRAME : 44304 $A_0 = 12.38^\circ$ $h = 0.198$

$Re = 3.95 \text{ E}6$ $A_1 = 2.02^\circ$ $M = 0.302$

$C_{Lmax} = 1.68$ $C_{Mmin} = -0.11$ $C_{Dmax} = 0.21$

$\alpha_{Lmax} = 14.5^\circ$ $\xi = -0.603$ $M_{max} = 1.216$

$\alpha_{Cmin} = 12.2^\circ$ $-C_{Dmax} = 9.0$ $\alpha_{Mmax} = 13.8^\circ$

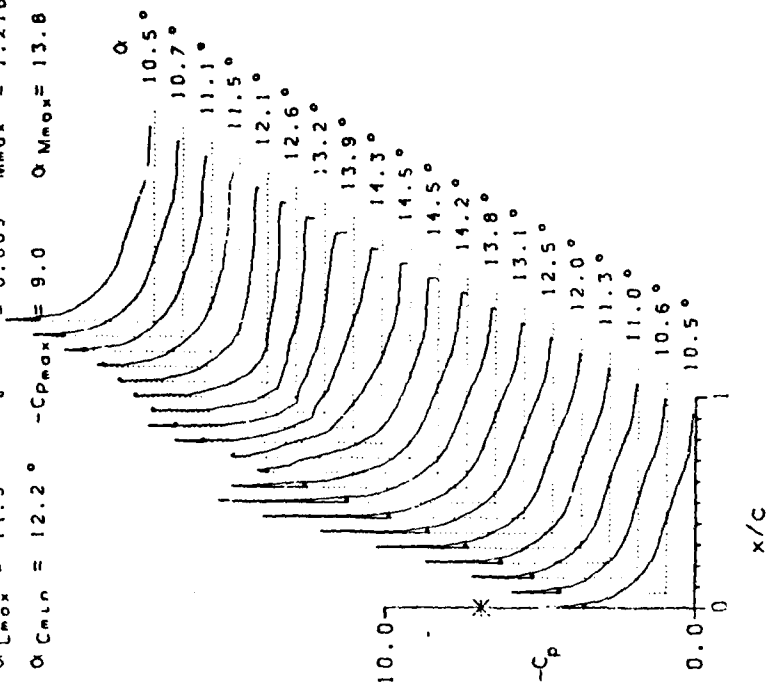
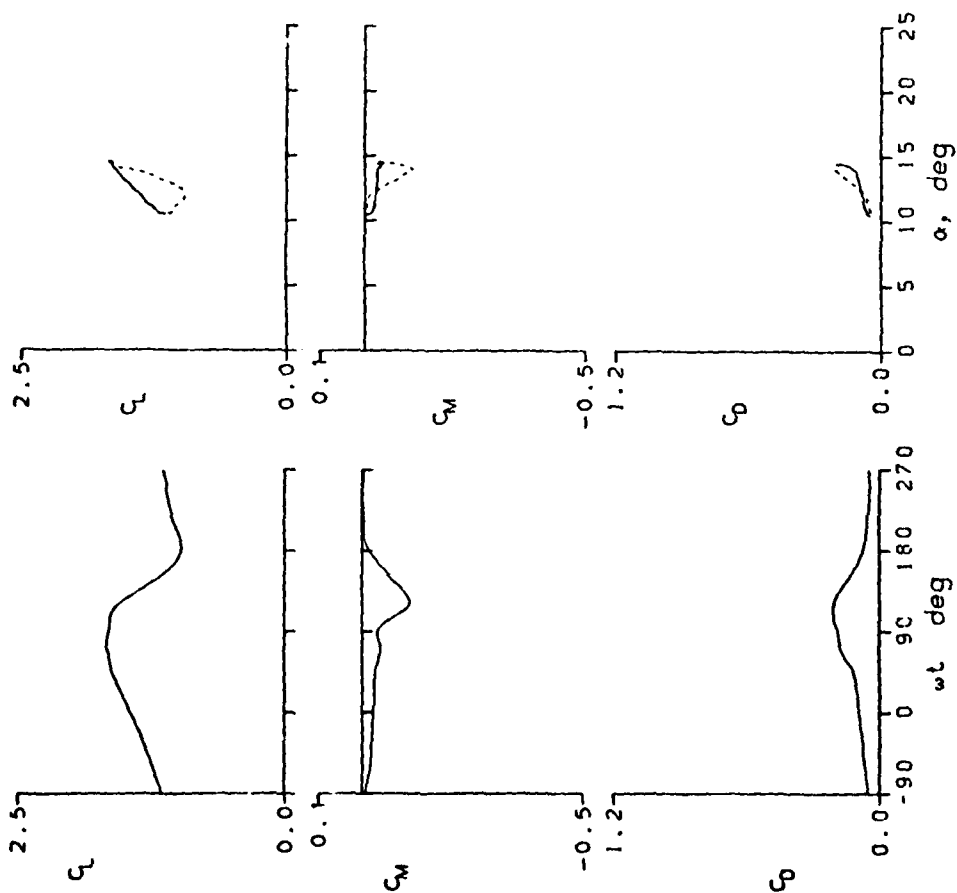


Figure 16.- Concluded.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45019	A0 = 14.83°	k = 0.025
Re = 4.06 E6	A1 = 9.93°	M = 0.300
CLmax = 1.82	CMmin = -0.23	CDmax = 0.43
αLmax = 16.3°	ξ = 0.234	Mmax = 1.326
αCMmin = 14.5°	-CPmax = 10.0	αMmax = 16.0°

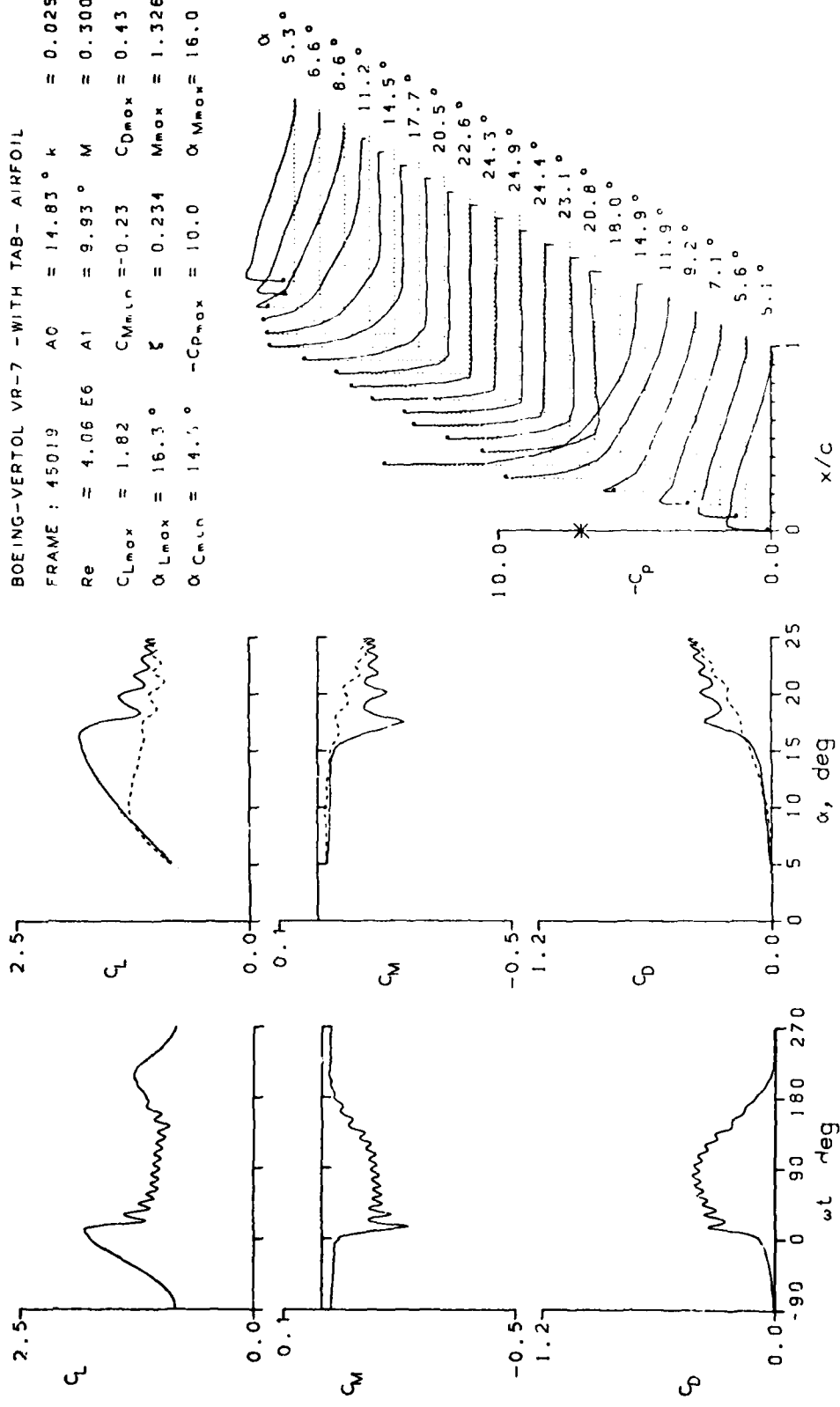


Figure 17.- Dynamic data for Vertol VR-7 airfoil.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 4502: $A_0 = 14.84^\circ$ $k = 0.051$
 $R_0 = 3.94$ E_6 $A_1 = 9.90^\circ$ $M = 0.292$
 $C_{Lmax} = 2.11$ $C_{Mmin} = -0.25$ $C_{Dmax} = 0.46$
 $\alpha_{Lmax} = 18.1^\circ$ $\xi = 0.278$ $M_{max} = 1.473$
 $\alpha_{Cmin} = 14.5^\circ$ $-C_{Pmax} = 11.7$ $\alpha_{Mmax} = 17.8^\circ$

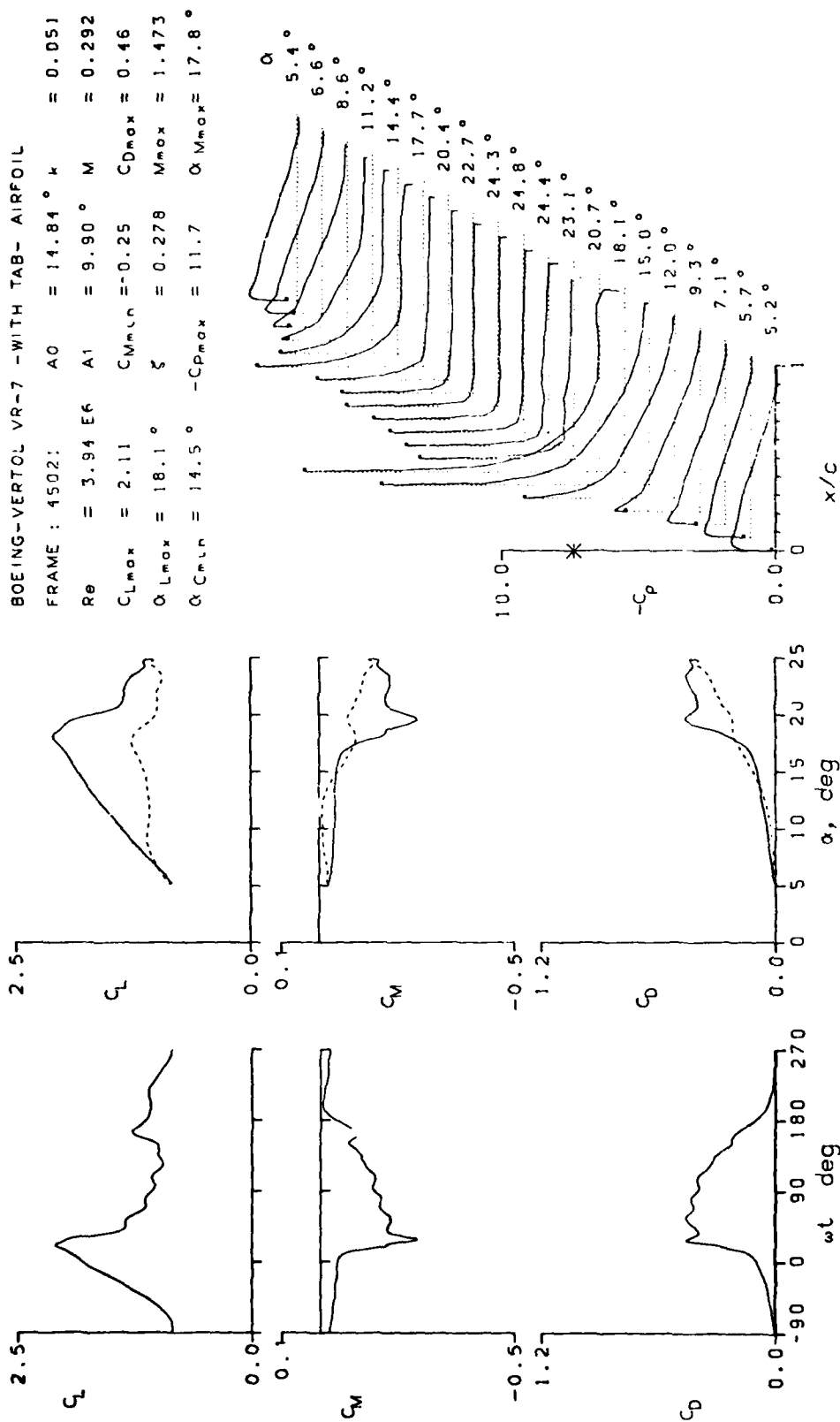


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH- TAB- AIRFOIL
 FRAME : 45023 A0 = 14.82° k = 0.101
 Re = 3.93 E6 A1 = 9.86° M = 0.293
 CLmax = 2.33 CMmin = -0.40 CDmax = 0.82
 αLmax = 20.9° ζ = 0.496 Mmax = 1.502
 αCmin = 14.7° -CPmax = 11.8 αMmax = 18.0°

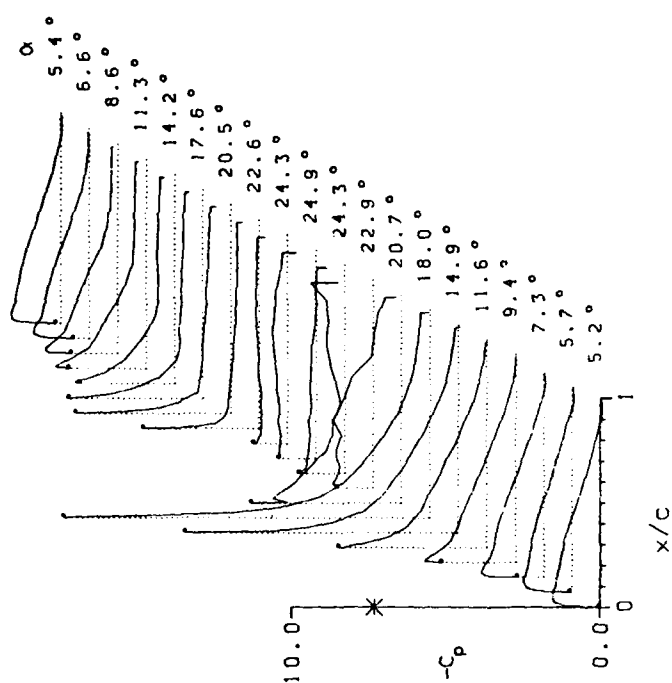
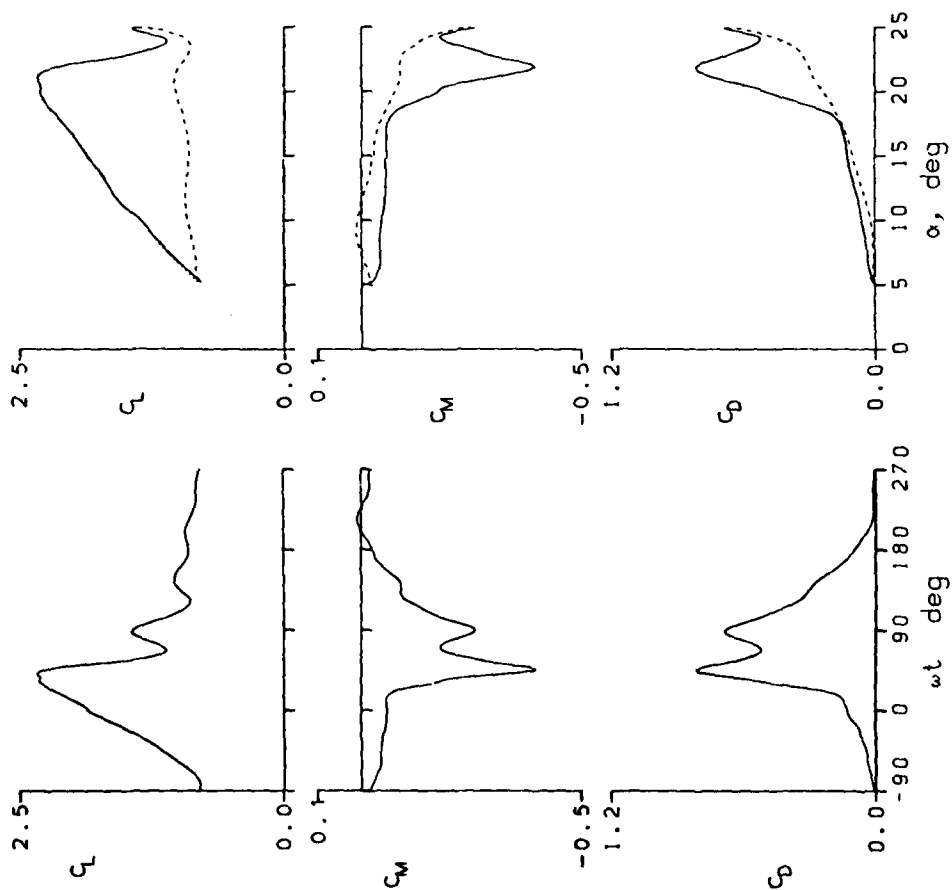


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45101 $A_0 = 14.89^\circ$ $k = 0.155$
 $Re = 3.82 \times 10^6$ $A_1 = 9.85^\circ$ $M = 0.285$
 $C_{Lmax} = 2.49$ $C_{Mmin} = -0.50$ $C_{Dmax} = 1.04$
 $\alpha_{Lmax} = 23.0^\circ$ $\zeta = 0.450$ $M_{max} = 1.489$
 $\alpha_{Cmin} = 11.7^\circ$ $-C_{Dmax} = 12.4$ $\alpha_{Mmax} = 18.9^\circ$

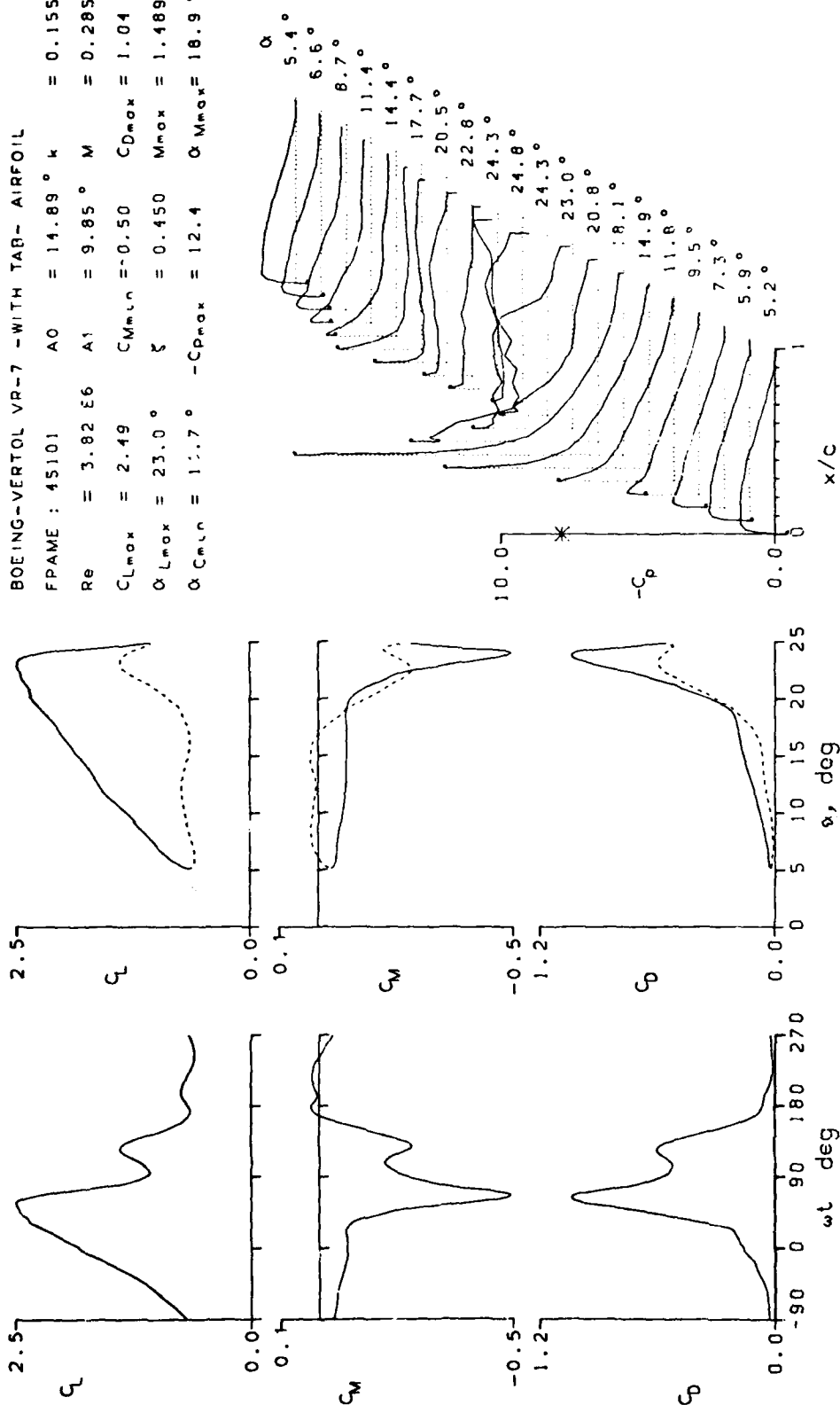


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WIT, TAB- AIRFOIL

FRAME : 45023	A0 = 14.82°	k = 0.101
Re = 3.93 E6	A1 = 9.86°	M = 0.293
CLmax = 2.33	CMmin = -0.40	CDmax = 0.82
αLmax = 20.9°	ξ = 0.496	Mmax = 1.502
αCmin = 14.7°	-CPmax = 11.8	αMmax = 18.0°

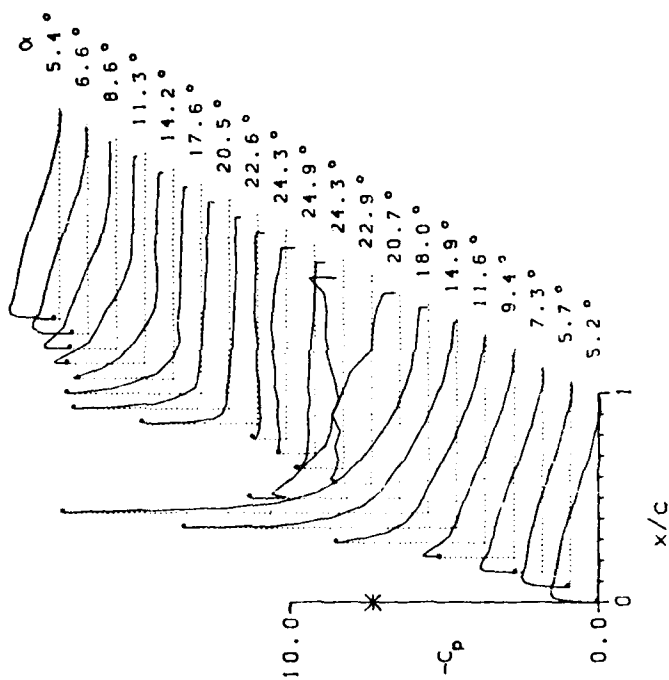
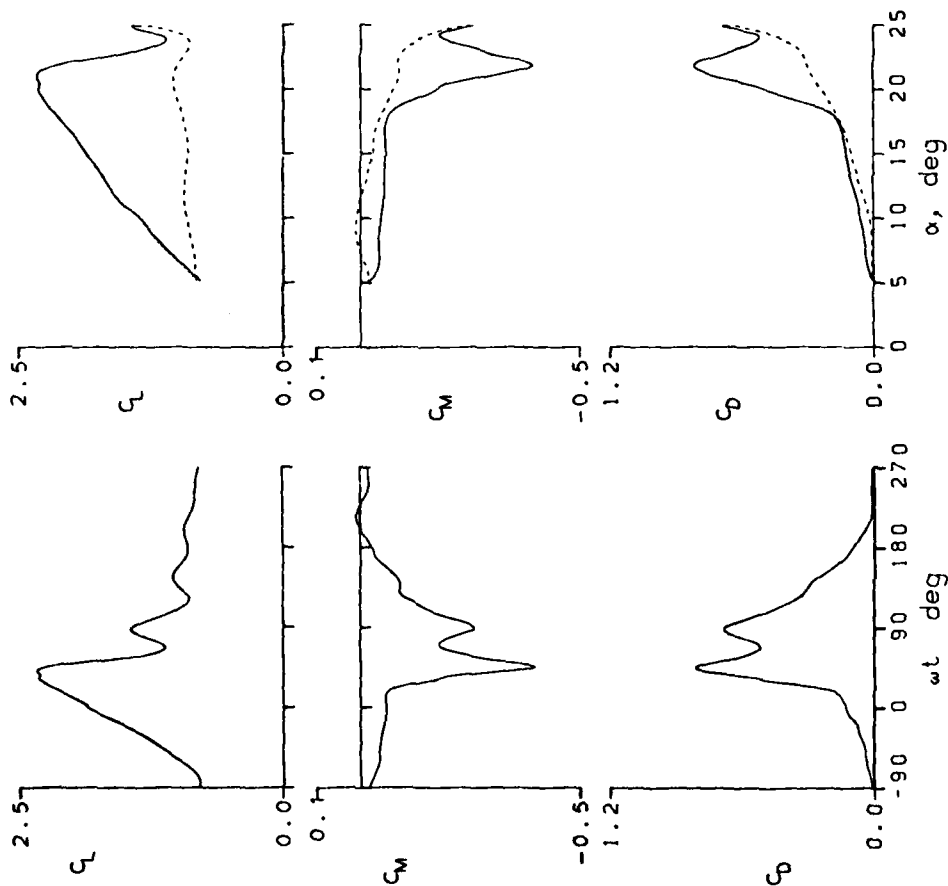


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45109 A0 = 9.91° k = 0.010
 Re = 4.03 E6 A1 = 9.89° M = 0.301
 CLmax = 1.66 CMmin = -0.11 CDmax = 0.26
 αLmax = 14.1° ζ = 0.043 Mmax = 1.151
 αCMmin = 9.4° -CDmax = 8.4 αMmax = 14.4°

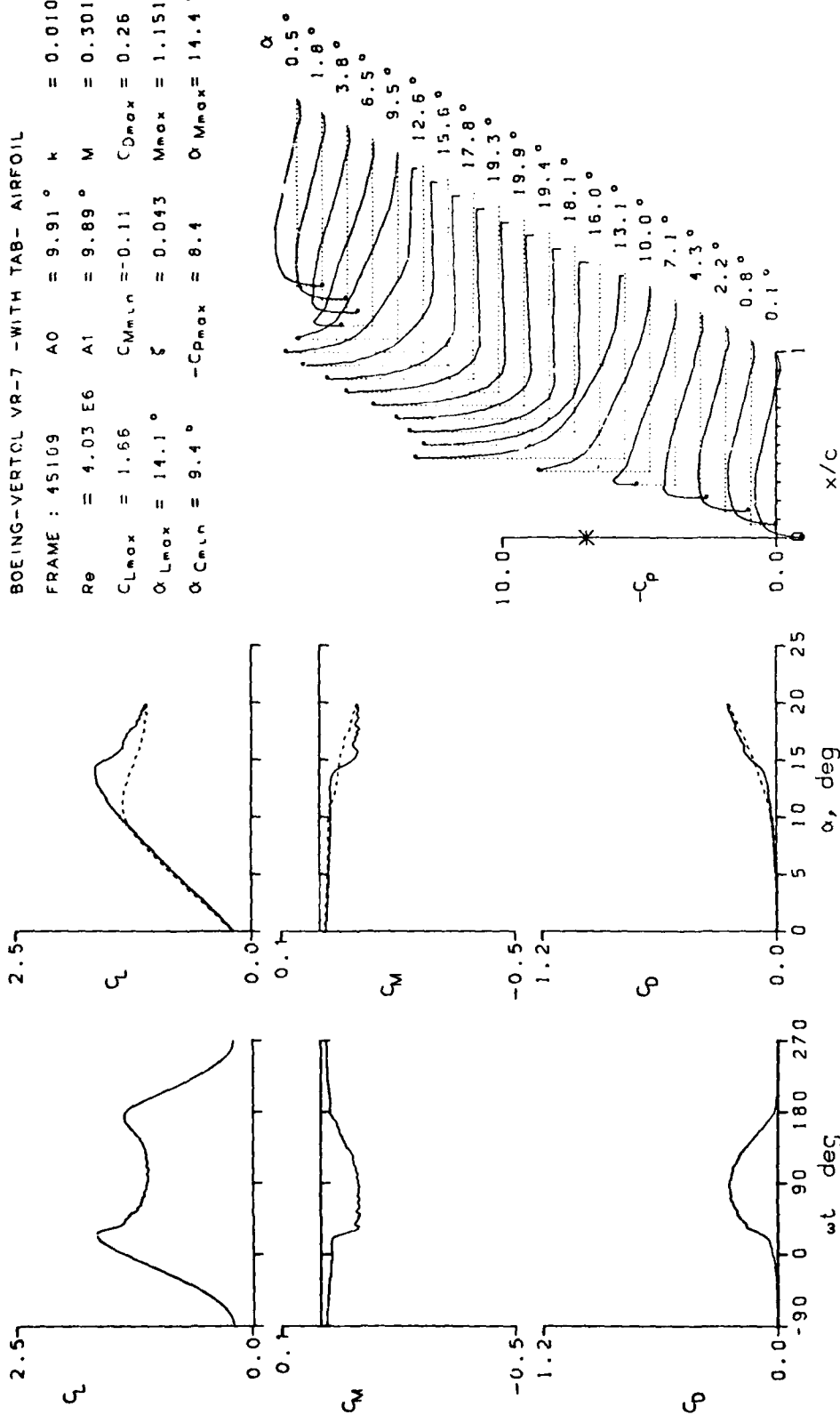


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45111 A0 = 9.76 ° k = 0.025
 Re = 4.01 E6 A1 = 9.91 ° M = 0.301
 CLmax = 1.78 CMmin = -0.20 CDmax = 0.30
 αLmax = 15.8 ° ζ = 0.146 Mmax = 1.304
 αCMmin = 9.2 ° -CDmax = 9.8 αMmax = 15.8 °

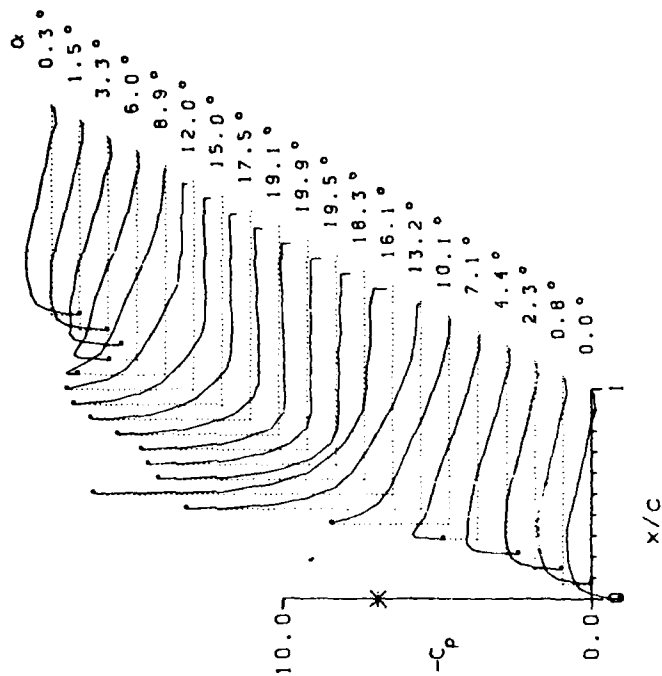
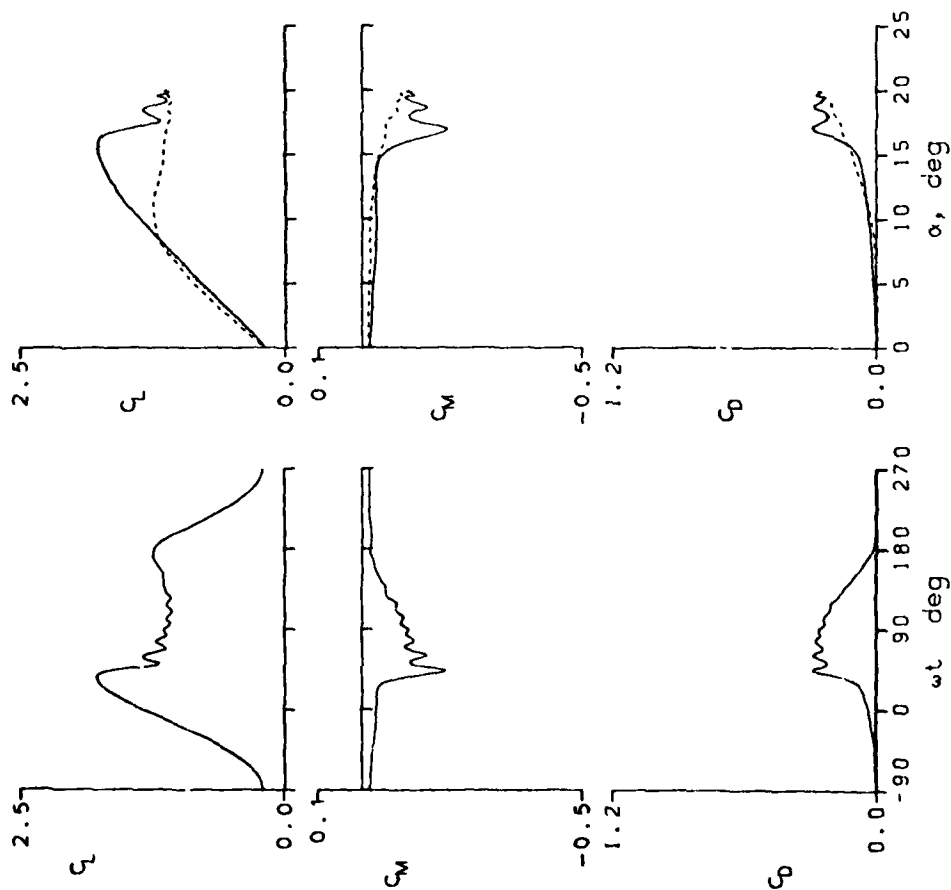


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45113 $A_0 = 9.72^\circ$ $k = 0.050$
 $Re = 4.01 \times 10^6$ $A_1 = 9.92^\circ$ $M = 0.301$
 $C_{Lmax} = 2.01$ $C_{Mmin} = -0.21$ $C_{Dmax} = 0.36$
 $\alpha_{Lmax} = 17.3^\circ$ $\xi = 0.157$ $M_{max} = 1.449$
 $\alpha_{Cmin} = 9.1^\circ$ $-C_{pmax} = 10.8$ $\alpha_{Mmax} = 17.0^\circ$

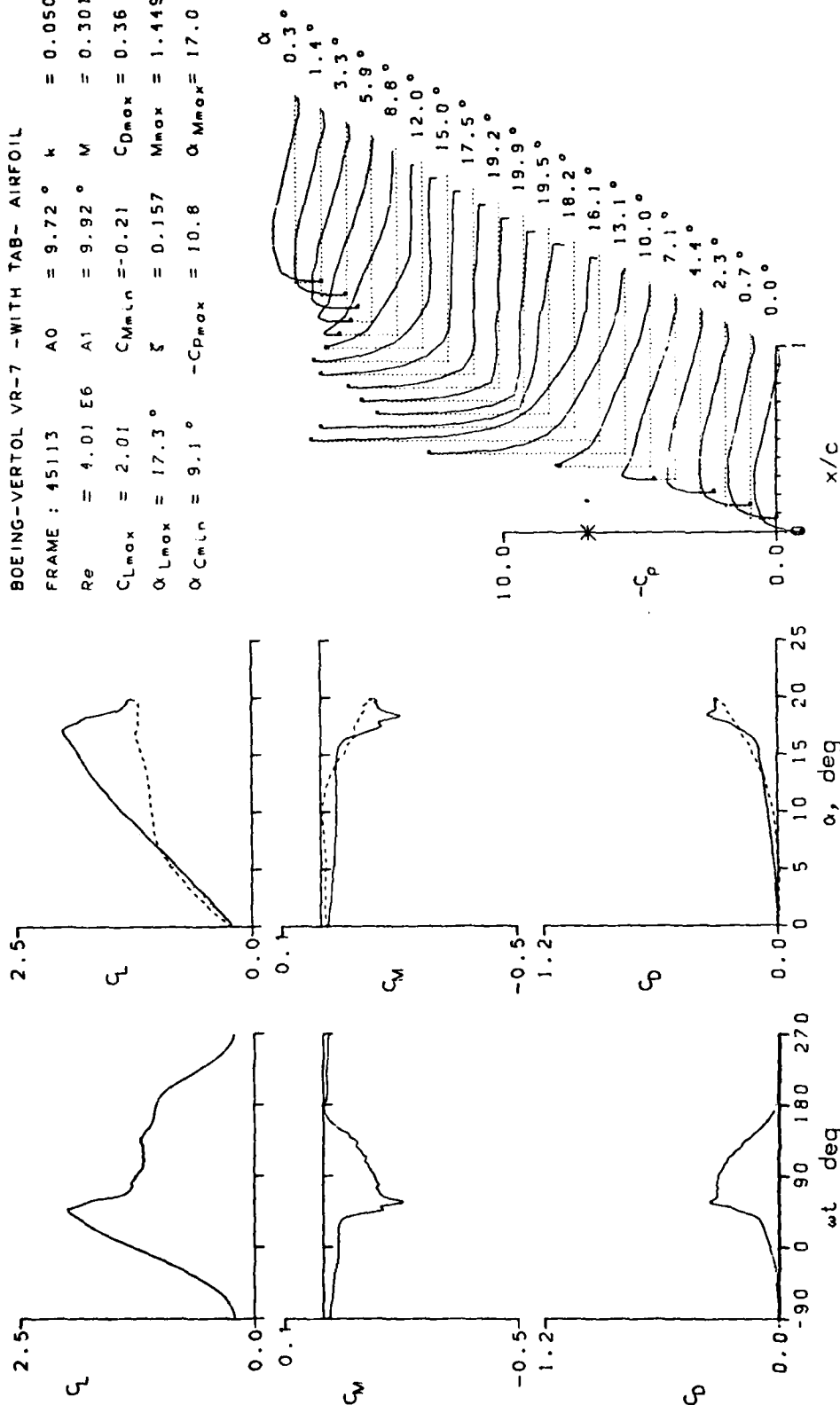


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45117	A0 = 9.75°	k = 0.100
Re = 4.02 E6	A1 = 9.88°	M = 0.301
CLmax = 2.21	CMmin = -0.33	CDmax = 0.65
αLmax = 18.5°	ξ = 0.228	Mmax = 1.489
αCMmin = 9.1°	-CDmax = 11.1	αMmax = 17.3°

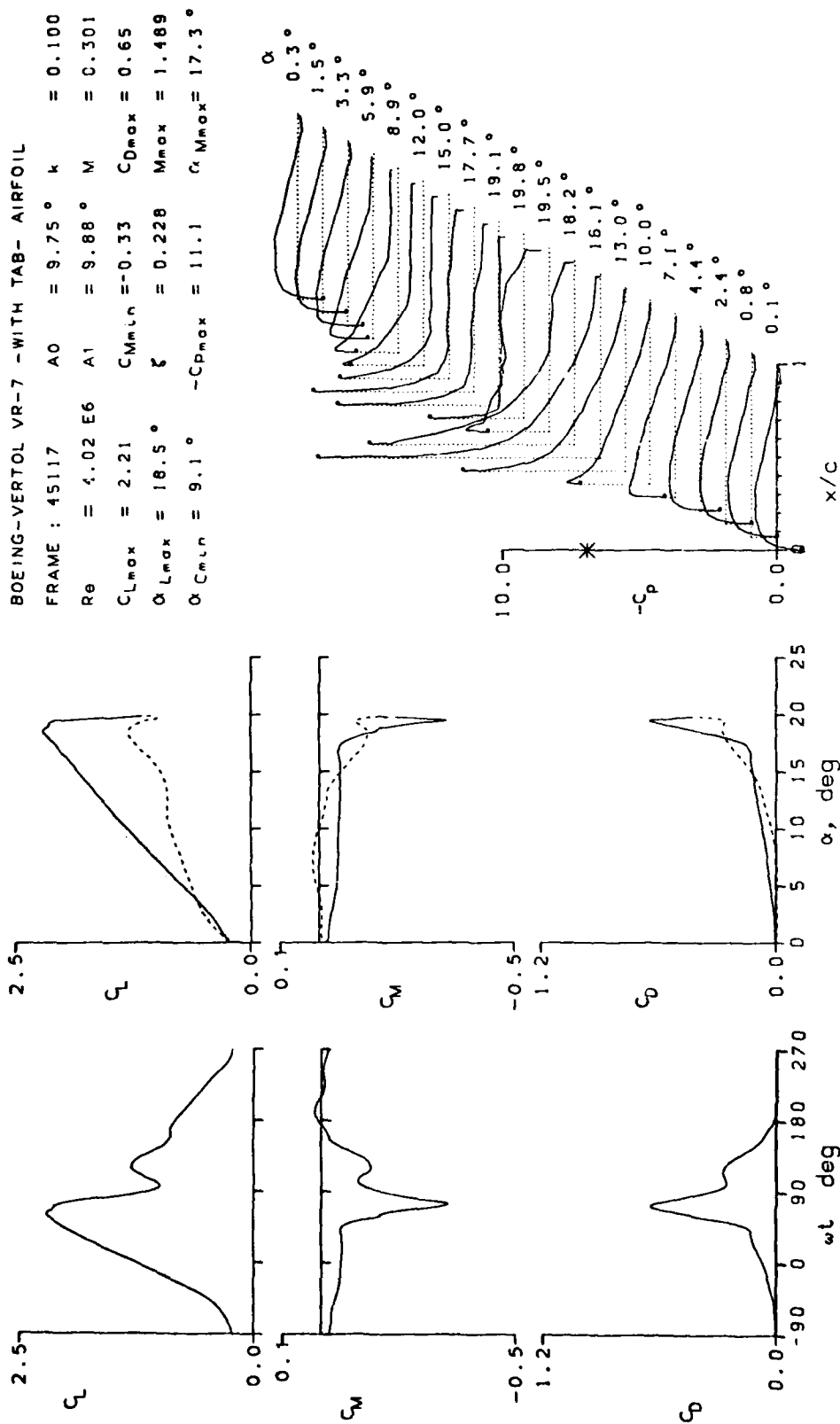


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45119	A0 = 9.81°	k = 0.150
Re = 1.02 E6	A1 = 9.91°	M = 0.302
CLmax = 2.30	CMmin = -0.40	CDmax = 0.76
αLmax = 19.4°	ξ = 0.259	Mmax = 1.495
αCmin = 9.2°	-CPmax = 11.1	αMmax = 17.9°

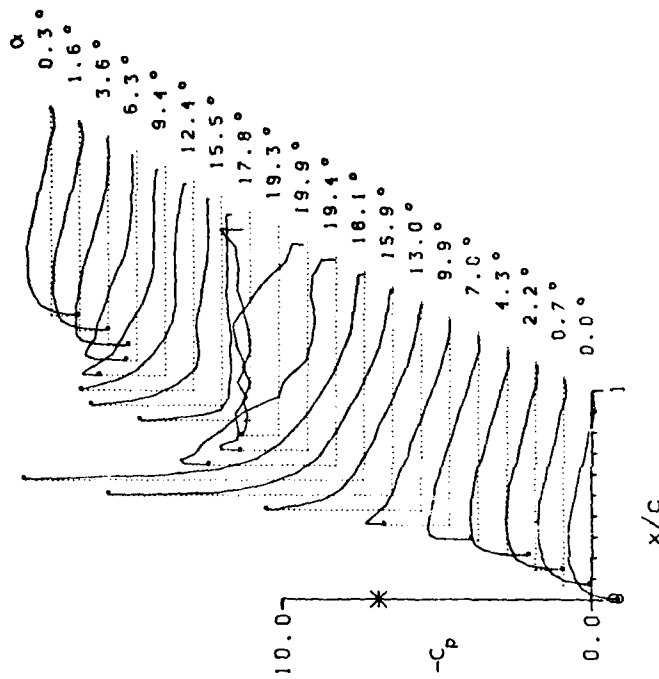
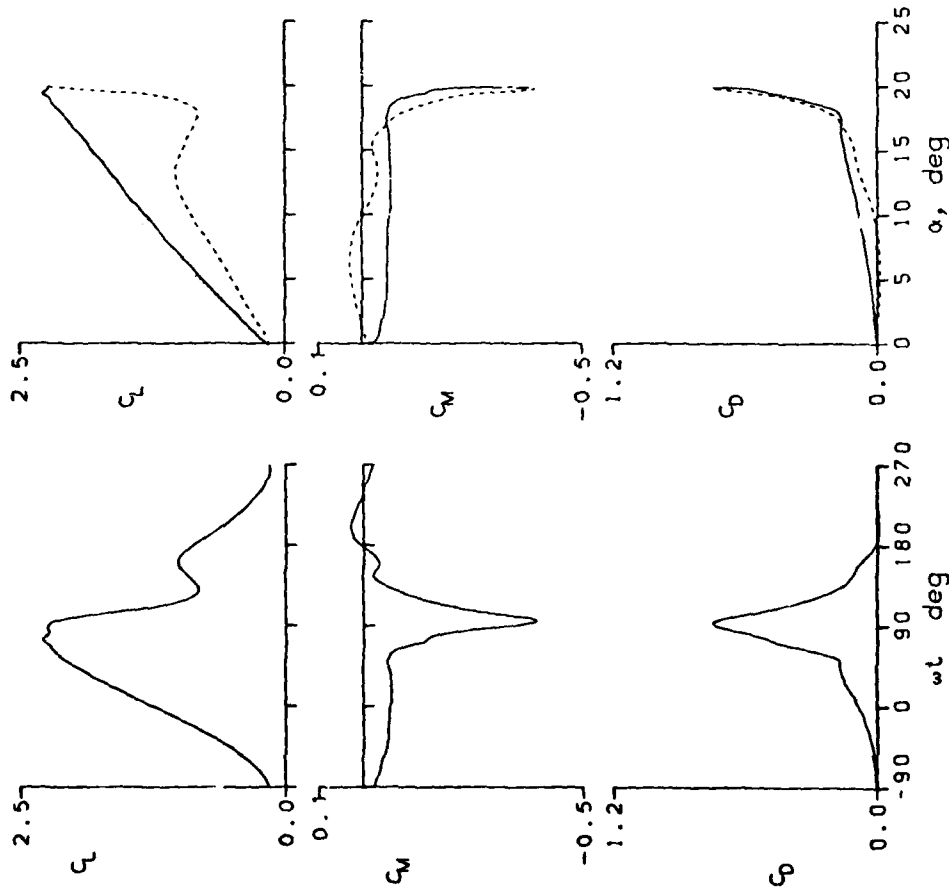


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45203	A0 = 14.65 °	k = 0.010
Re = 4.02 E6	A1 = 5.05 °	M = 0.300
CLmax = 1.60	CMmin = -0.11	CDmax = 0.25
α Lmax = 12.7 °	ξ = 0.077	Mmax = 1.034
α CMmin = 14.6 °	-CPmax = 7.3	α Mmax = 13.4 °

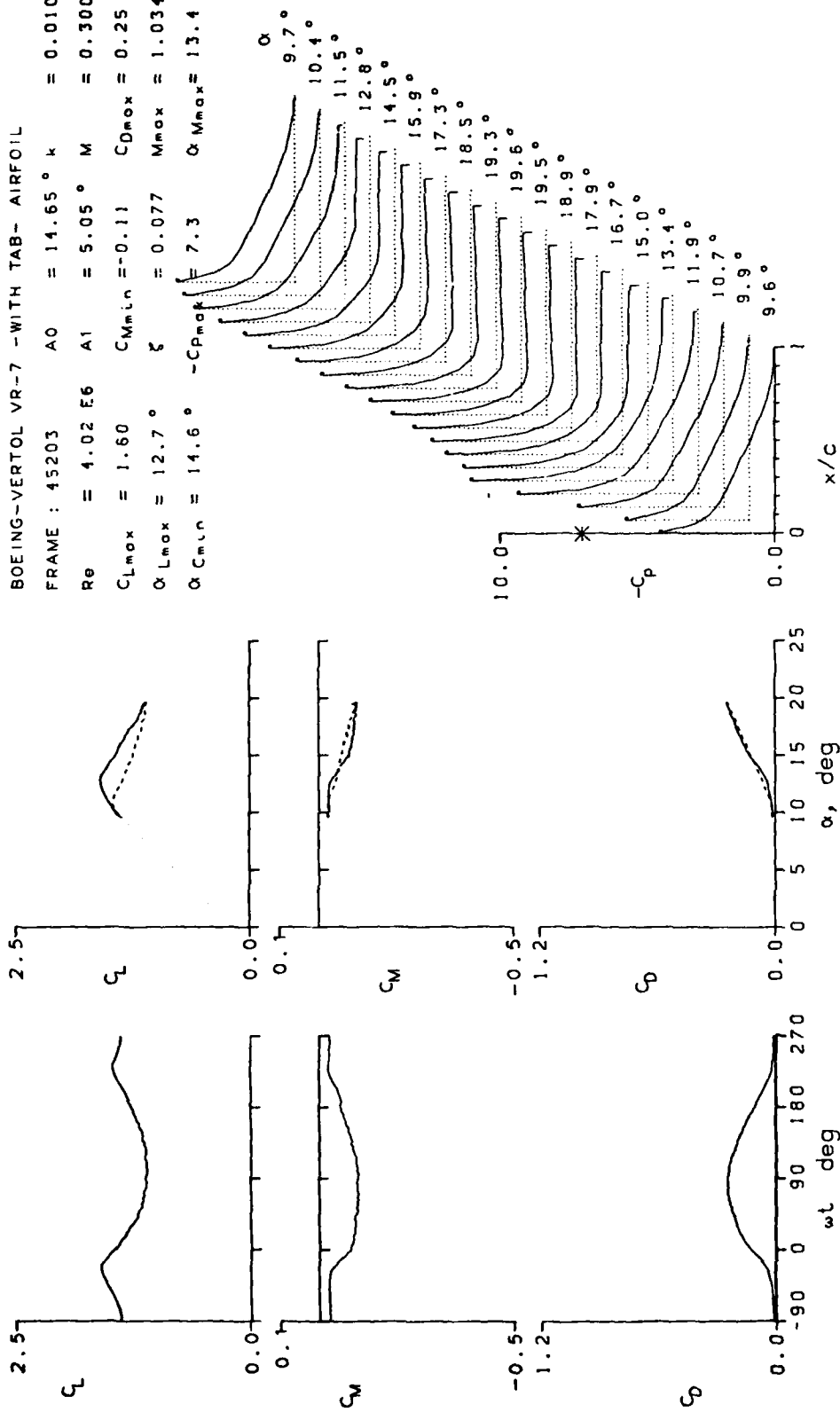


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45205 $A_0 = 14.96^\circ$ $k = 0.025$
 $Re = 4.01 \text{ E}6$ $A_1 = 4.88^\circ$ $M = 0.301$
 $C_{Lmax} = 1.68$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.76$
 $\alpha_{Lmax} = 14.5^\circ$ $\xi = 0.207$ $M_{max} = 1.190$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Pmax} = 8.8$ $\alpha_{Mmax} = 14.9^\circ$

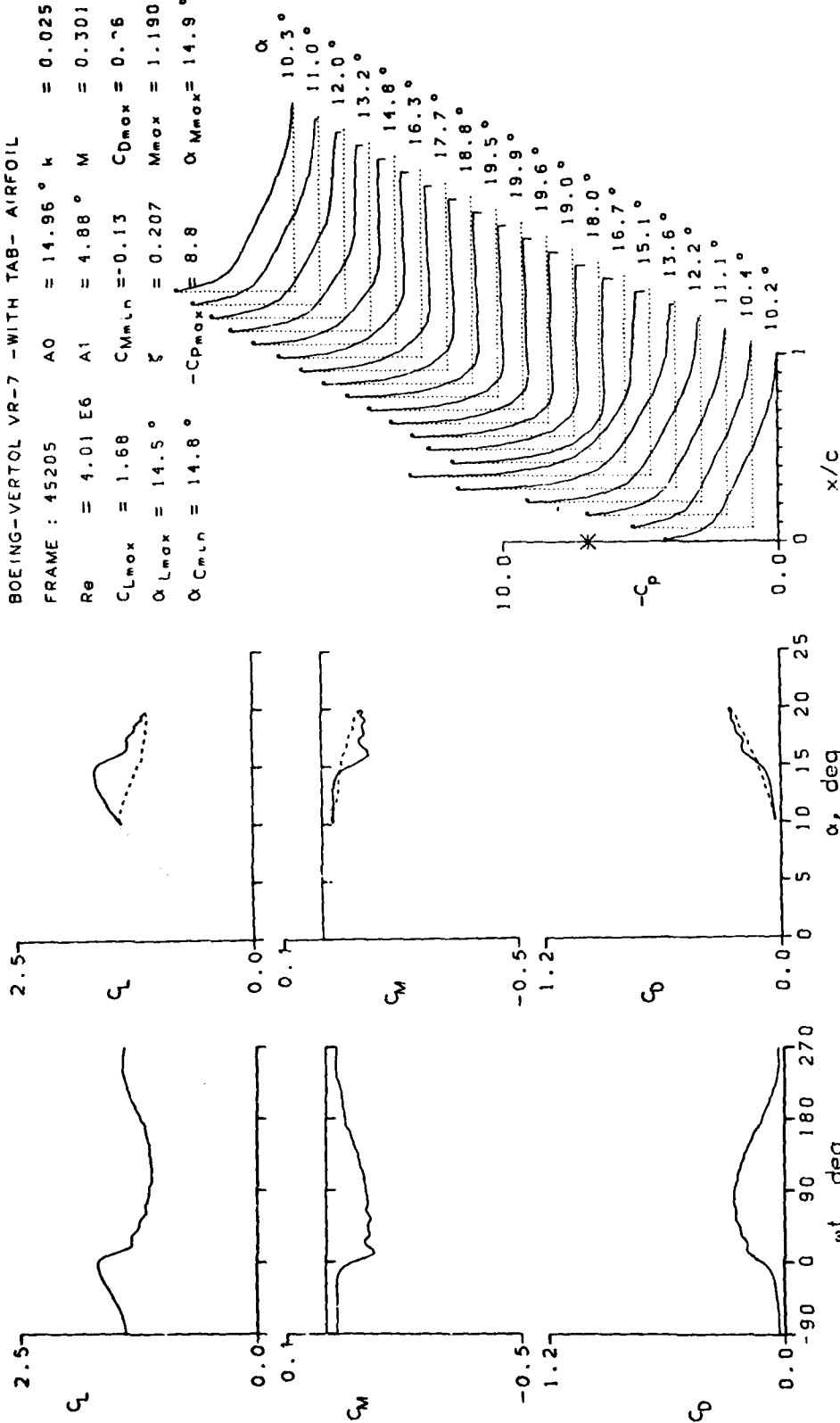


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TA3- AIRFOIL

FRAME : 45207	$A_0 = 14.98^\circ$	$k = 0.050$
$Re = 4.01 \text{ E} 6$	$A_1 = 4.69^\circ$	$M = 0.301$
$C_{Lmax} = 1.82$	$C_{Mmin} = -0.22$	$C_{Dmax} = 0.34$
$\alpha_{Lmax} = 16.3^\circ$	$\xi = 0.515$	$M_{max} = 1.326$
$\alpha_{Cmin} = 14.8^\circ$	$-C_{Pmax} = 9.9$	$\alpha_{Mmax} = 15.1^\circ$

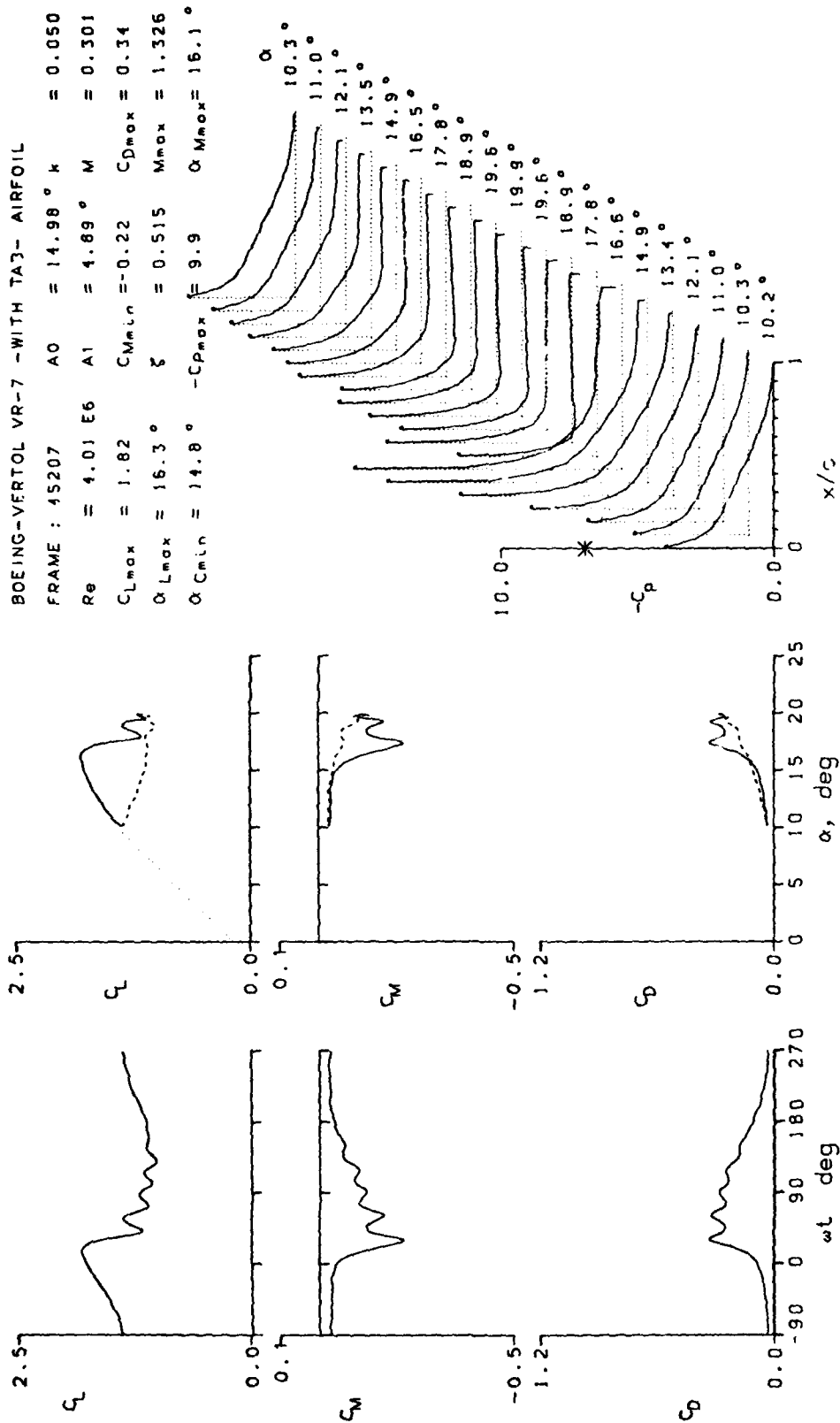


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45209 $A_0 = 14.96^\circ$ $k = 0.100$
 $Re = 3.99 \text{ E}6$ $A_1 = 4.89^\circ$ $M = 0.300$
 $C_{Lmax} = 2.07$ $C_{Mmin} = -0.25$ $C_{Dmax} = 0.44$
 $\alpha_{Lmax} = 17.6^\circ$ $\xi = 0.339$ $M_{max} = 1.460$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Pmax} = 11.0$ $\alpha_{Mmax} = 17.5^\circ$

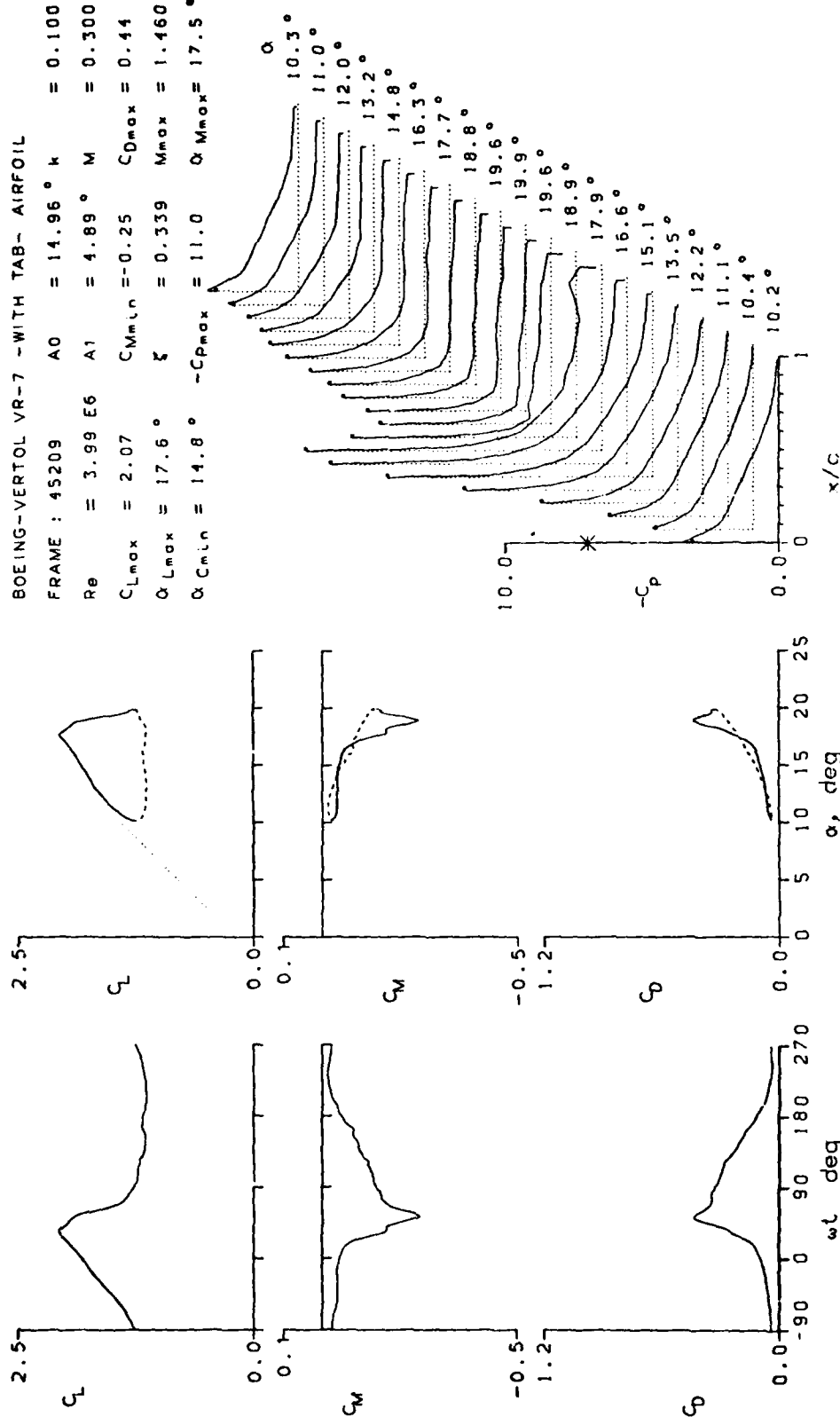


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45211	$A_0 = 14.94^\circ$	$k = 0.151$
$Re = 3.96 E6$	$A_1 = 4.89^\circ$	$M = 0.298$
$C_{Lmax} = 2.21$	$C_{Mmin} = -0.33$	$C_{Dmax} = 0.65$
$\alpha_{Lmax} = 18.5^\circ$	$\xi = 0.297$	$M_{max} = 1.482$
$\alpha_{Cmin} = 14.8^\circ$	$-C_{pmax} = 11.3$	$\alpha_{Mmax} = 17.6^\circ$

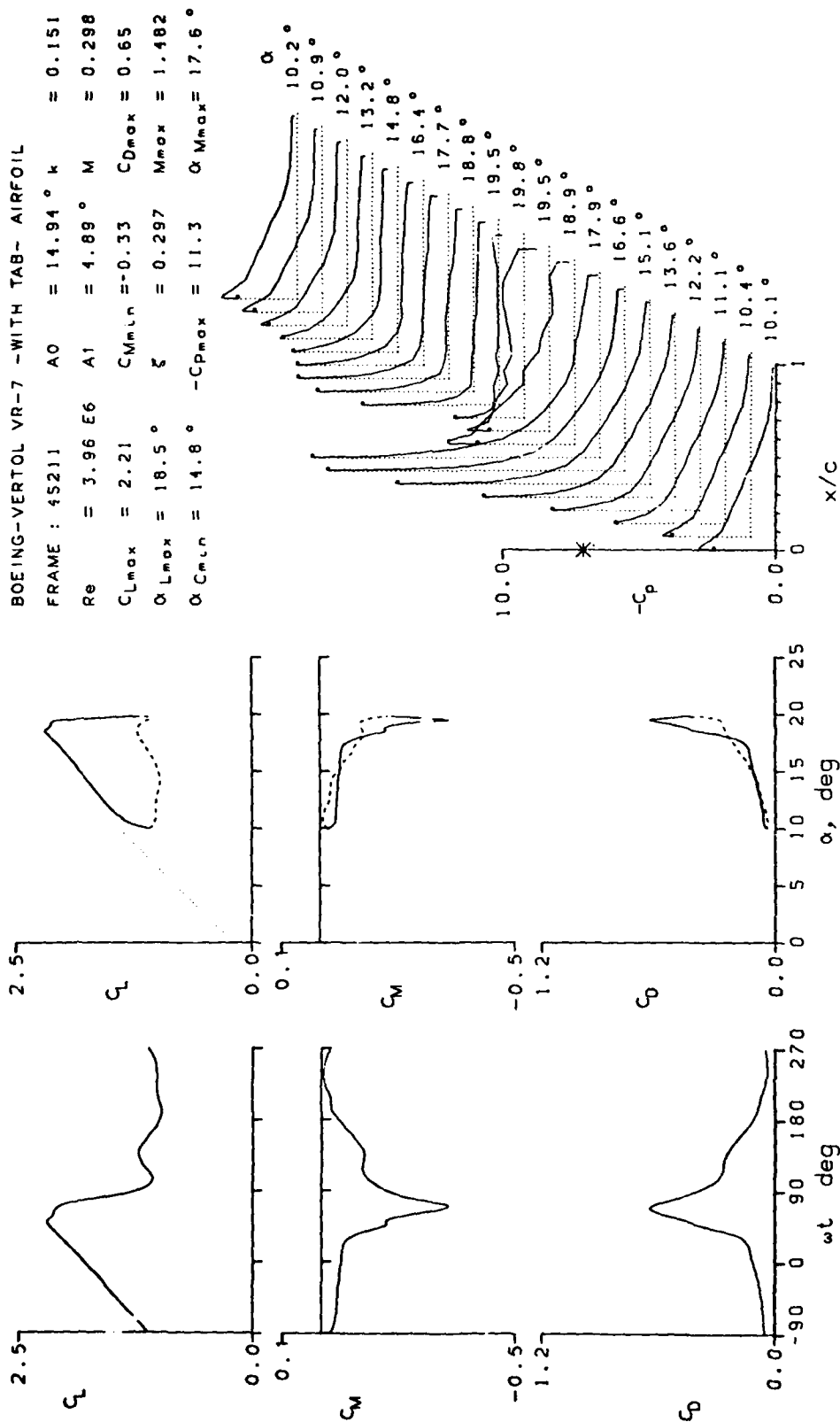


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45213 $A_0 = 14.98^\circ$ $k = 0.204$
 $Re = 3.91 E6$ $A_1 = 4.88^\circ$ $M = 0.295$
 $C_{Lmax} = 2.33$ $C_{Mmin} = -0.42$ $C_{Dmax} = 0.77$
 $\alpha_{Lmax} = 18.9^\circ$ $\xi = 0.240$ $M_{max} = 1.484$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{pmax} = 11.6$ $\alpha_{Mmax} = 17.5^\circ$

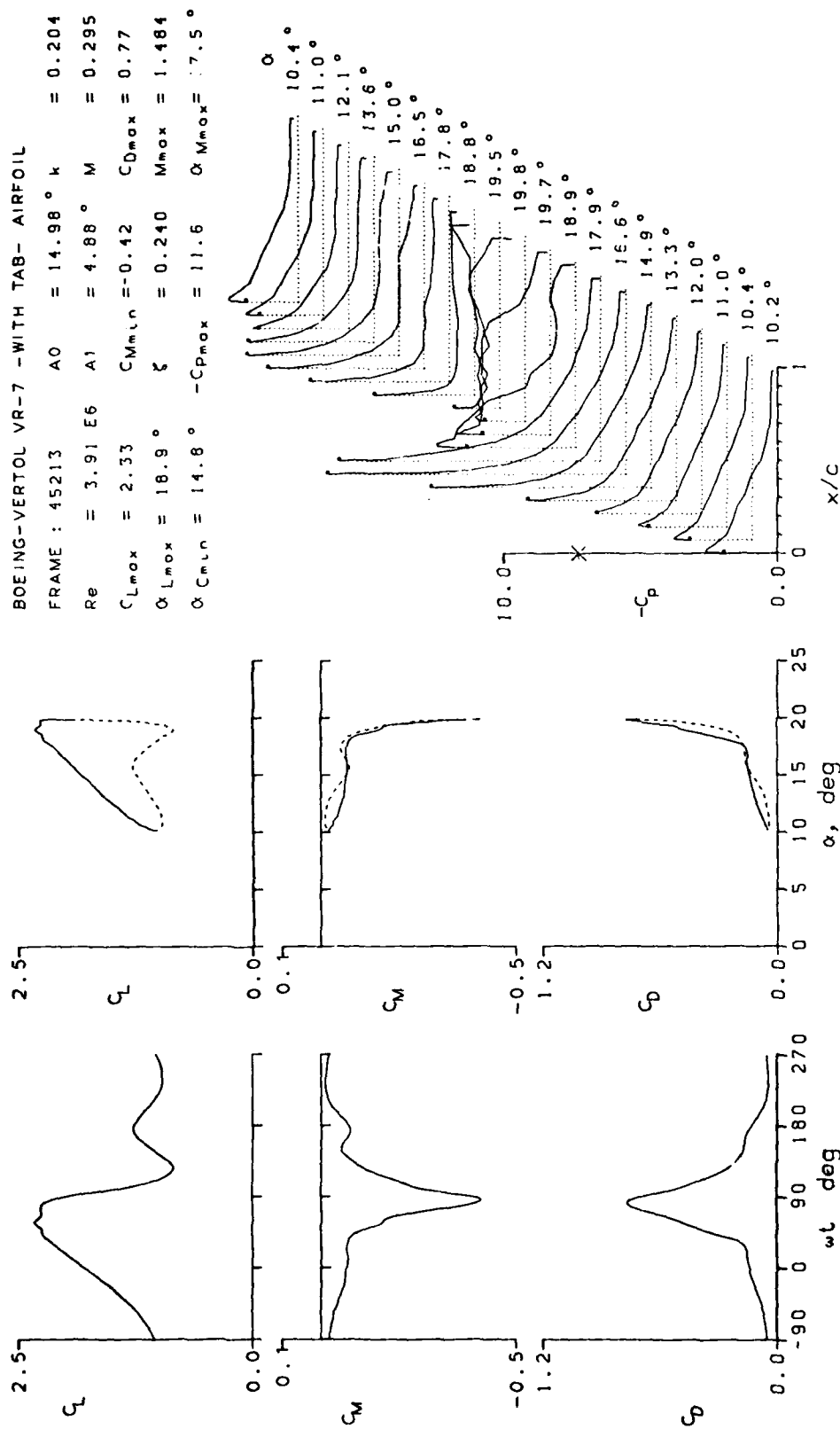


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45221 A0 = 9.90° k = 0.025
 Re = 4.05 E6 A1 = 4.91° M = 0.302
 $C_{Lmax} = 1.65$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.14$
 $\alpha_{Lmax} = 13.8^\circ$ $\xi = 0.008$ $M_{max} = 1.134$
 $\alpha_{Cmin} = 9.6^\circ$ $-C_{Dmax} = 8.2$ $\alpha_{Mmax} = 14.2^\circ$

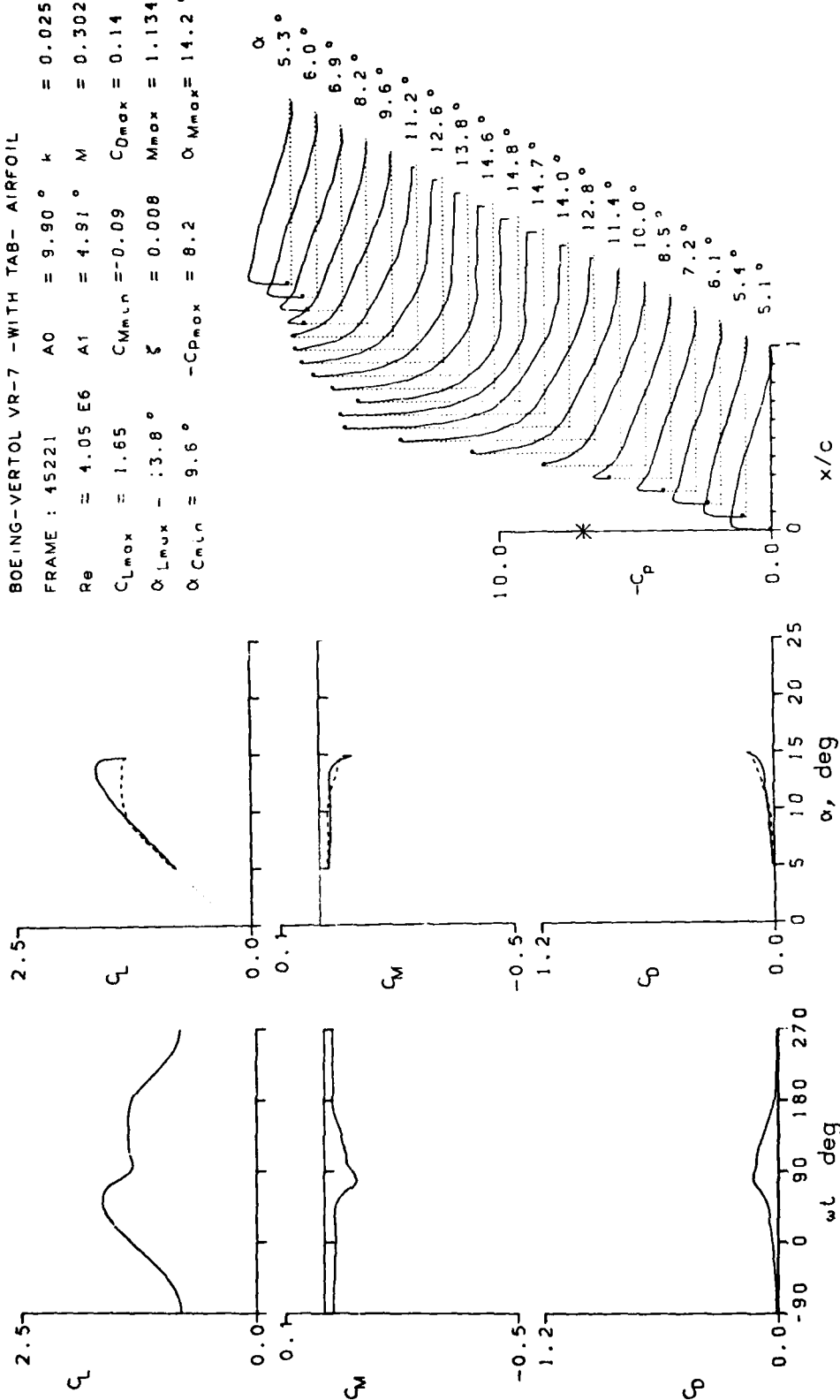


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45223	A0 = 9.89°	k = 0.050
Re = 4.03 E6	A1 = 4.91°	M = 0.301
CLmax = 1.70	CMmin = -0.10	CDmax = 0.14
αLmax = 14.7°	ξ = 0.070	Mmax = 1.219
αCMmin = 9.6°	-CPmax = 9.0	αMmax = 14.7°

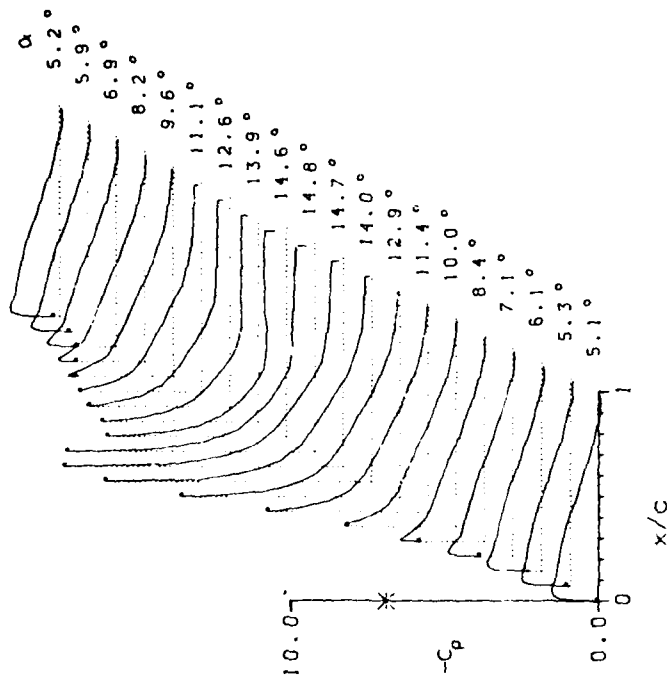
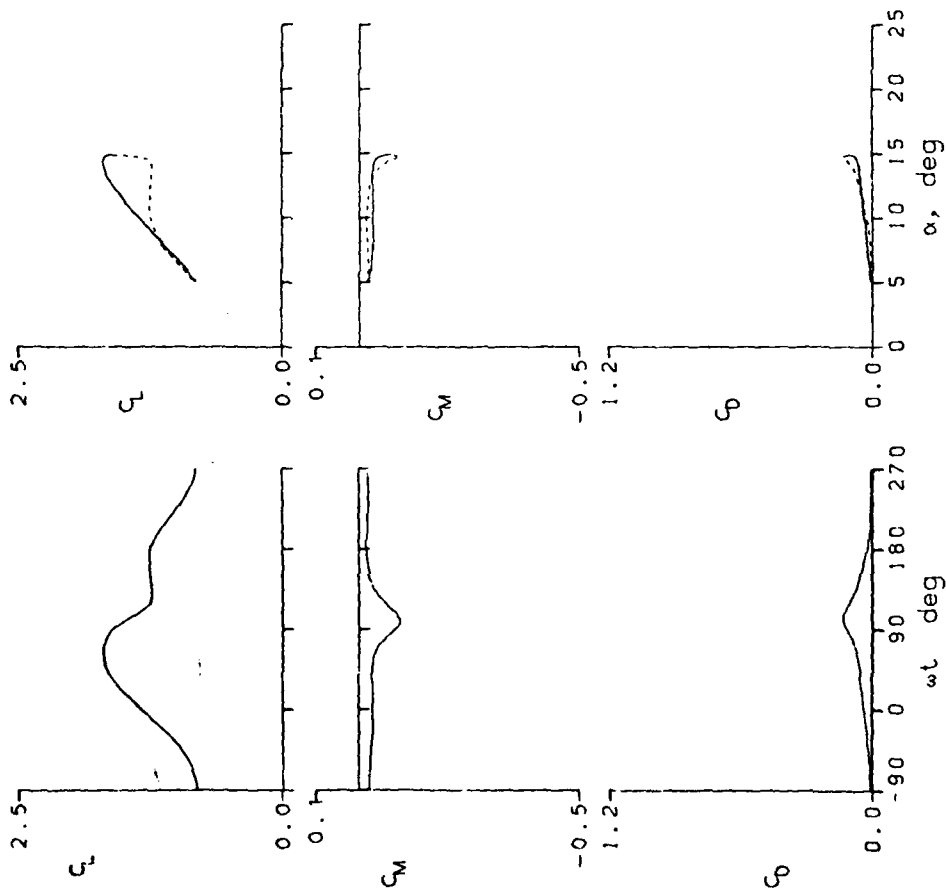


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 45300 $A_0 = 9.89^\circ$ $k = 0.100$

$Re = 4.03 \times 10^6$ $A_1 = 4.91^\circ$ $M = 0.301$

$C_{Lmax} = 1.78$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.10$

$\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.084$ $M_{max} = 1.296$

$\alpha_{Cmin} = 9.6^\circ$ $-C_{pmax} = 9.7$ $\alpha_{Mmax} = 14.8^\circ$

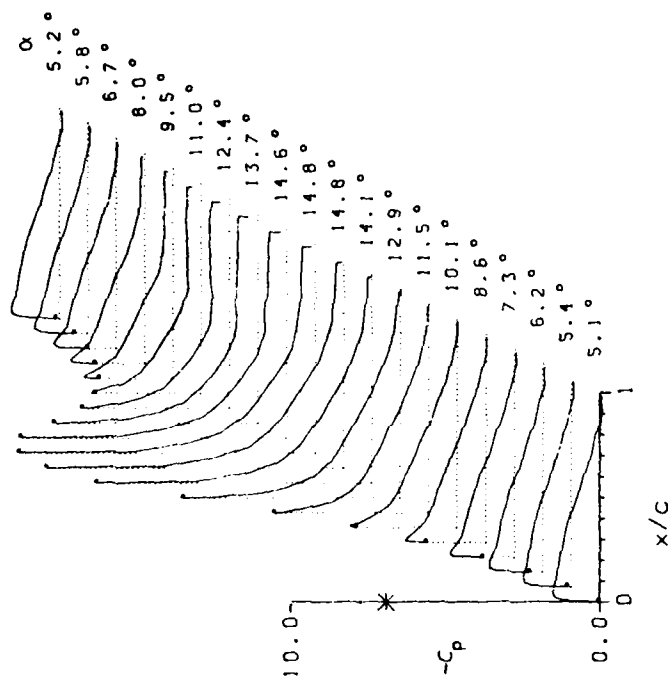
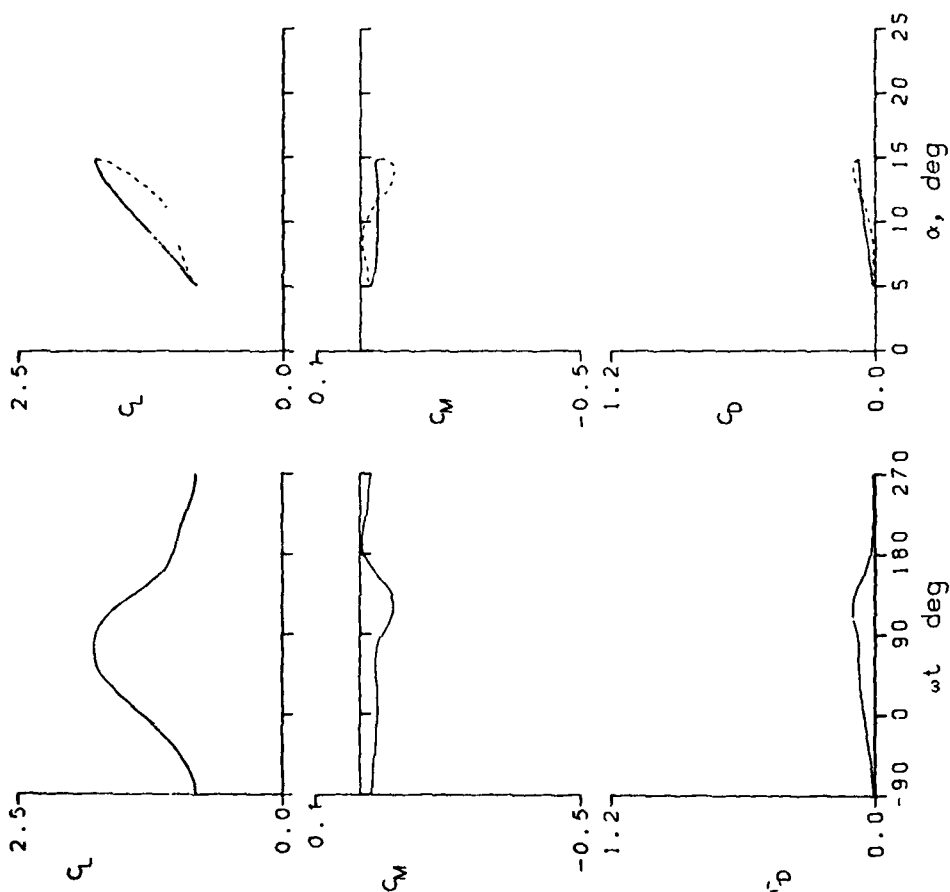


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45302 $A_0 = 9.90^\circ$ $k = 0.150$
 $Re = 4.03 \times 10^6$ $A_1 = 4.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.83$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 14.8^\circ$ $\zeta = 0.230$ $M_{max} = 1.346$
 $\alpha_{Cmin} = 9.6^\circ$ $-C_{Dmax} = 10.1$ $\alpha_{Mmax} = 14.8^\circ$

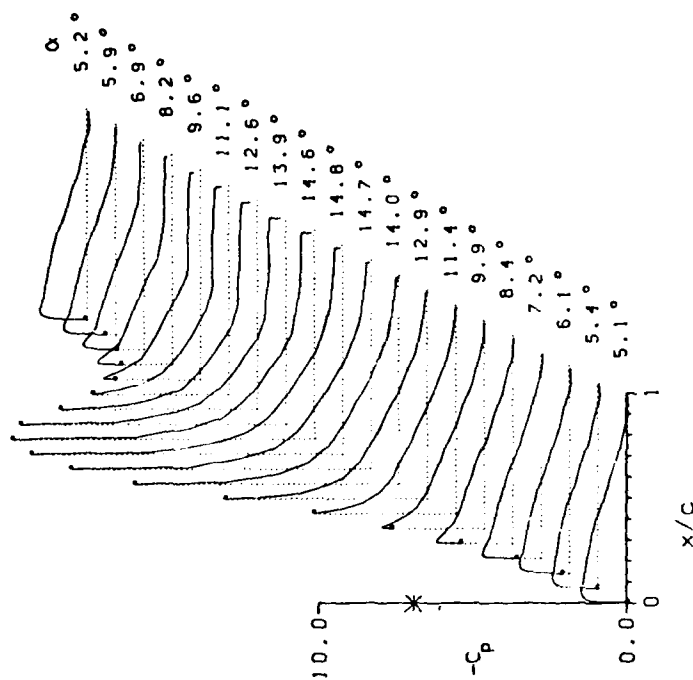
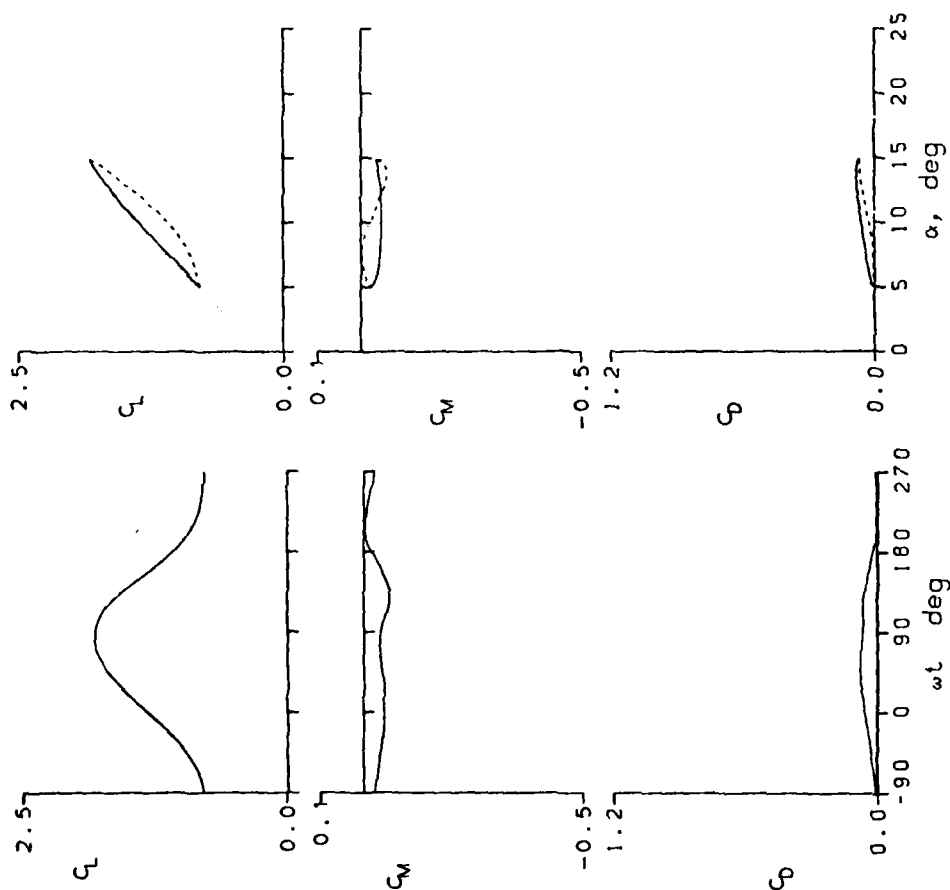


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 45303 A0 = 9.90° k = 0.200
 Re = 4.03 E6 A1 = 4.90° M = 0.301
 CLmax = 1.88 CMmin = -0.06 CDmax = 0.09
 αLmax = 14.9° ζ = 0.419 Mmax = 1.395
 αCMmin = 9.6° -CPmax = 10.4 αMmax = 14.8°

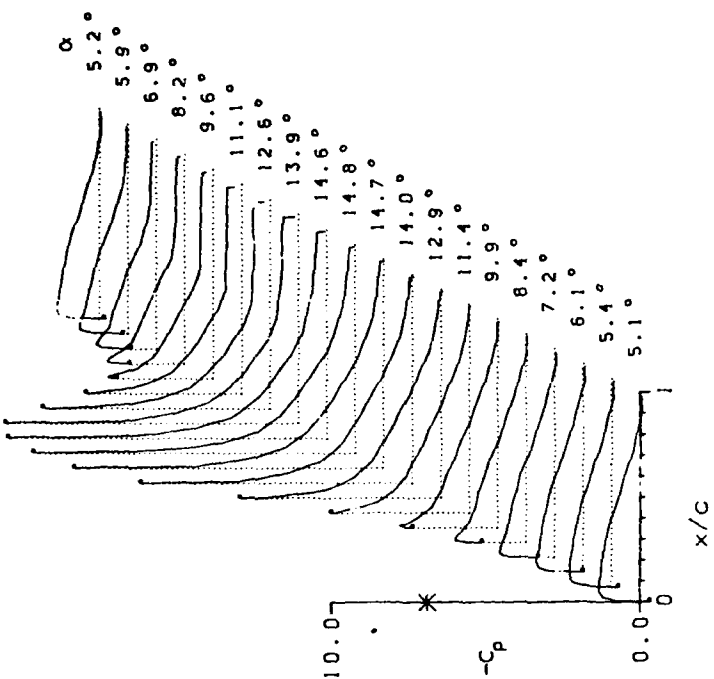
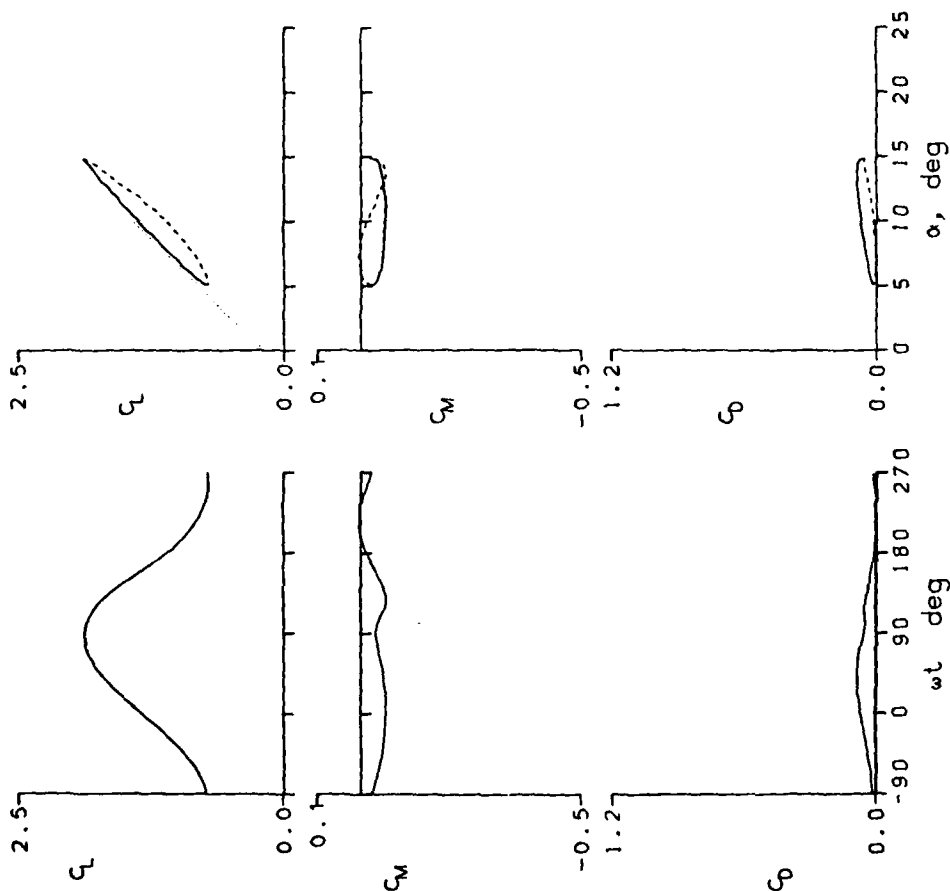


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL TRIP

FRAME : 47020	A0 = 14.81°	h = 0.025
Re = 4.06 E6	A1 = 9.88°	M = 0.299
C _{Lmax} = 1.66	C _{Mmin} = -0.20	C _{Dmax} = 0.47
α _{Lmax} = 14.9°	ξ = 0.211	M _{max} = 1.061
α _{Cmin} = 14.5°	-C _{pmax} = 7.6	α _{Mmax} = 15.2°

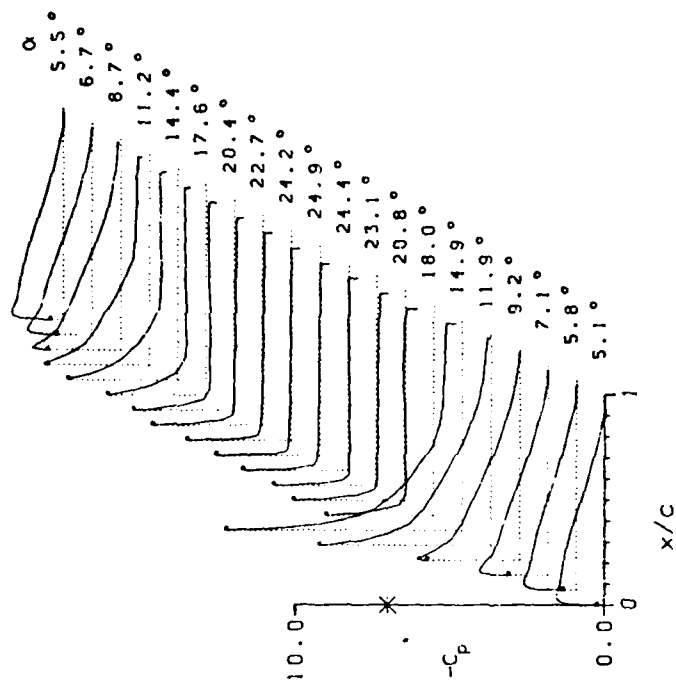
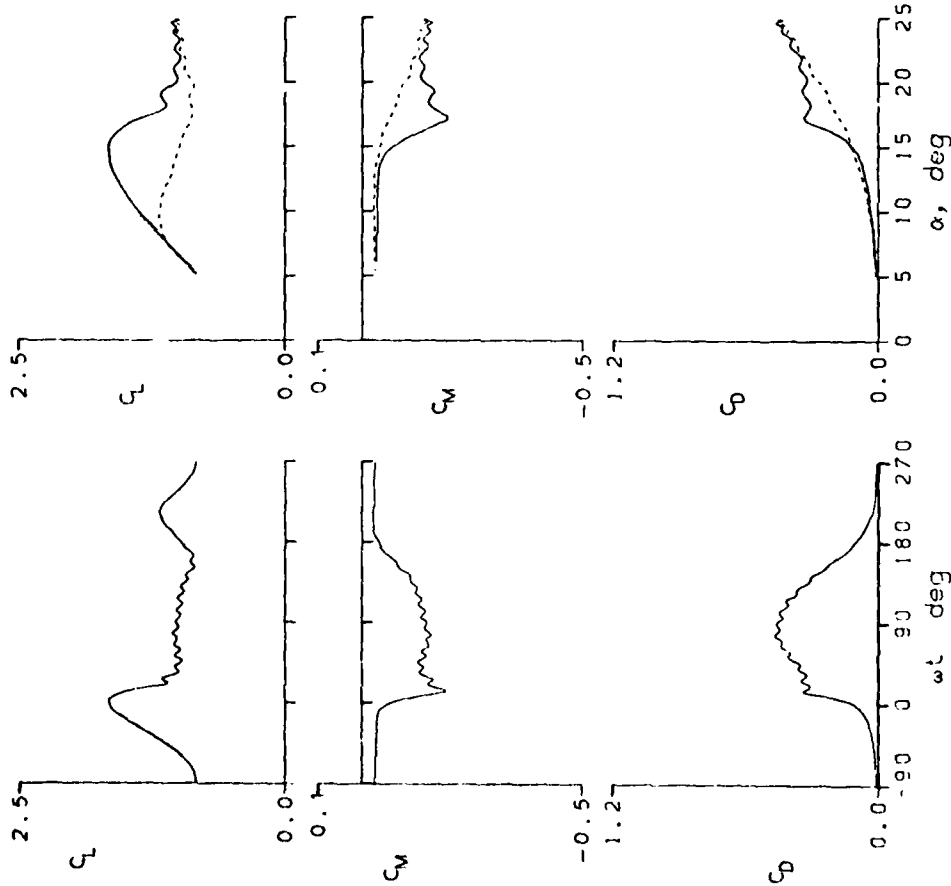


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL TRIP
 FRAME : 47022 A0 = 14.81° k = 0.050
 Re = 3.99 E6 A1 = 9.89° M = 0.296
 CLmax = 1.91 CMmin = -0.26 CDmax = 0.50
 α Lmax = 17.4° ζ = 0.369 Mmax = 1.291
 α Cmin = 14.5° -CDmax = 10.0 α Mmax = 17.4°

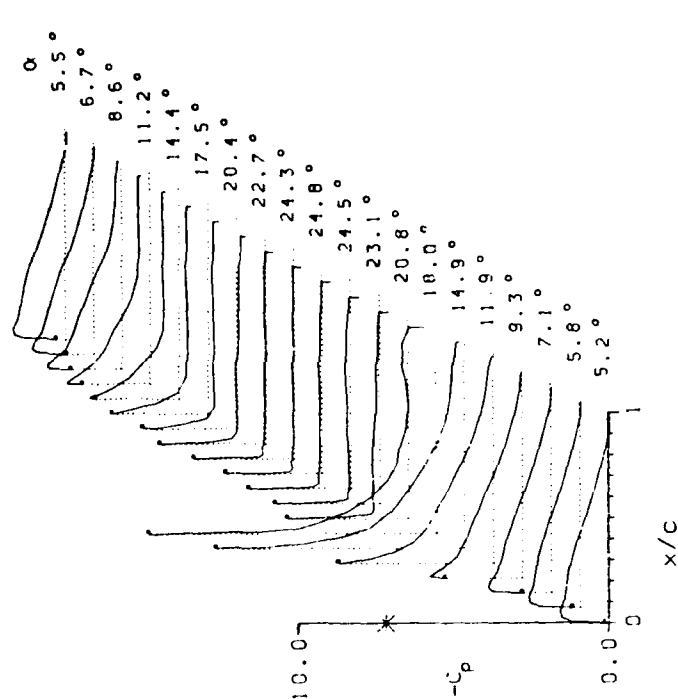
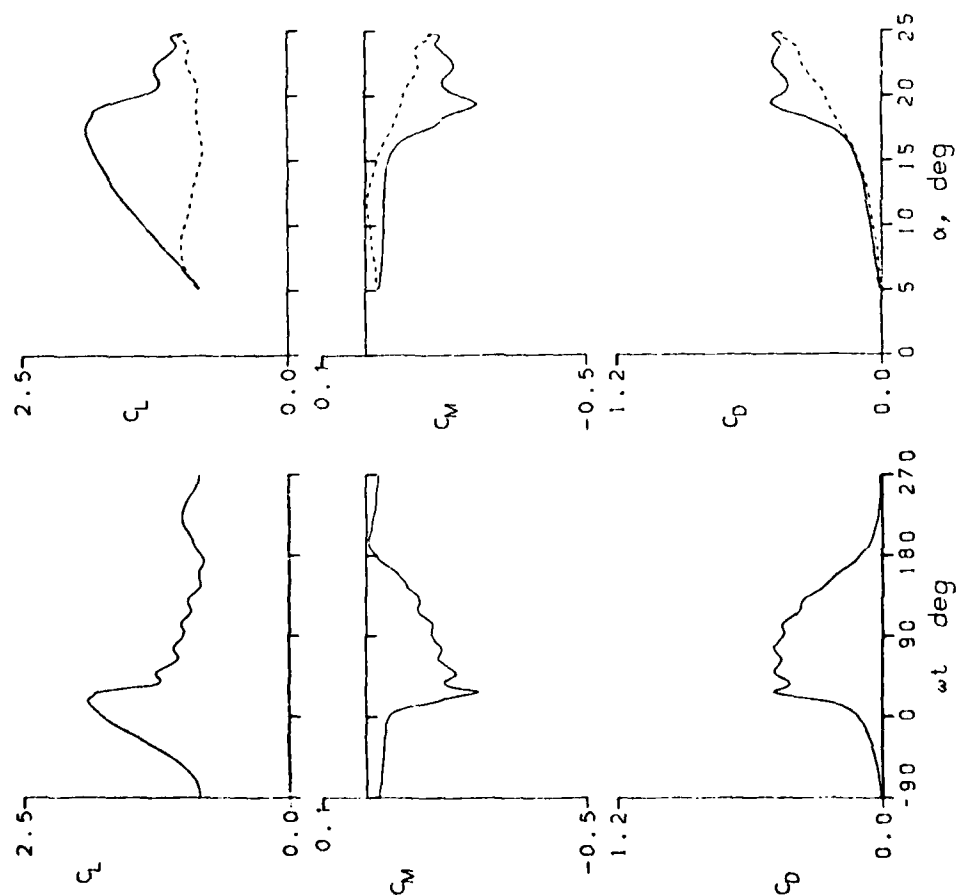


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL TRIP

FRAME : 47100 A0 = 14.82° k = 0.101

Re = 3.93 E6 A1 = 9.88° M = 0.292

CLmax = 2.34 CMmin = -0.40 CDmax = 0.84

αLmax = 21.0° ξ = 0.558 Mmax = 1.412

αCMmin = 14.4° -CDmax = 11.3 αMmax = 18.6°

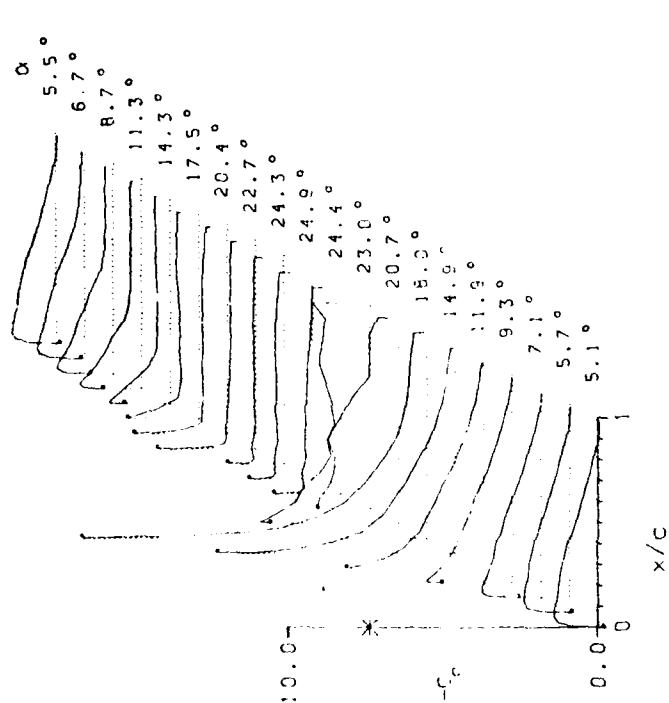
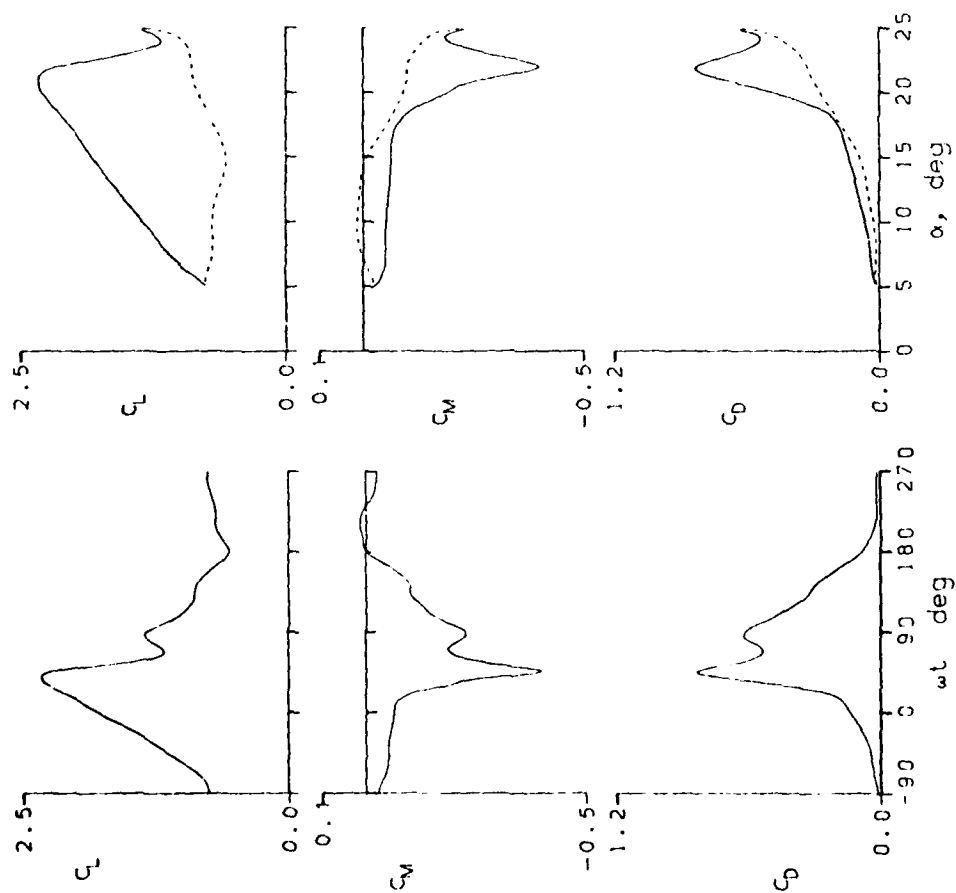


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL TRIP

FRAME : 47110 AO = 14.81° k = 0.051

Re = 2.58 E6 A1 = 9.98° M = 0.184

C_{Lmax} = 1.84 C_{Mmin} = -0.27 C_{Dmax} = 0.63

α_{Lmax} = 17.7° ξ = 0.355 M_{max} = 0.716

α_{Cmin} = 14.5° $-C_{Dmax}$ = 11.5° α_{Mmax} = 18.3°

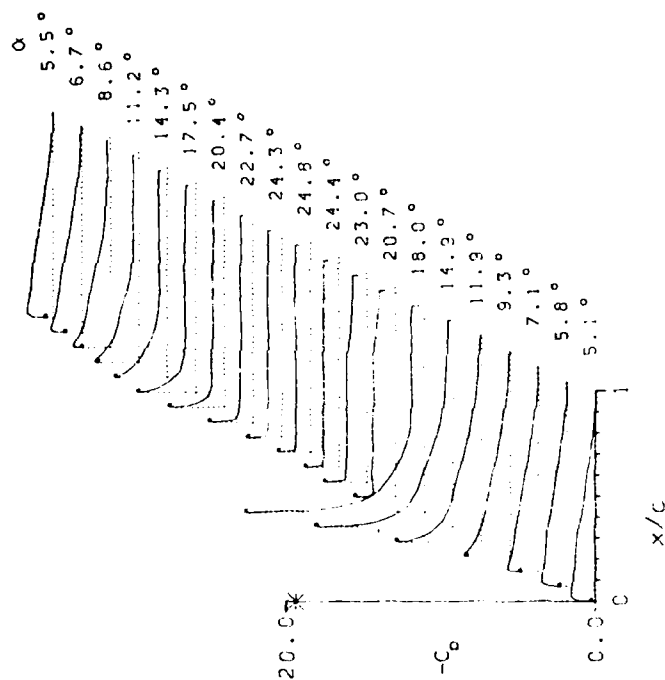
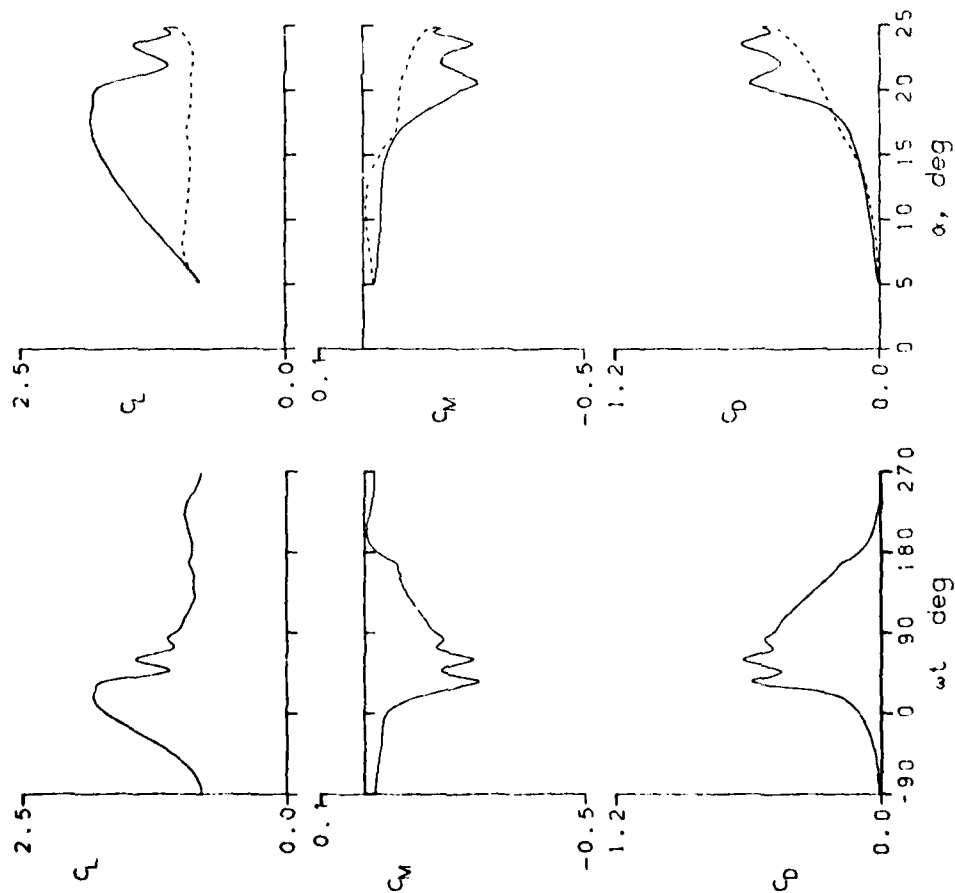


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB- AIRFOIL TRIP
 FRAME : 47112 A0 = 14.83° k = 0.101
 Re = 2.59 E6 A1 = 9.88° M = 0.185
 CLmax = 2.26 CMmin = -0.37 CDmax = 0.86
 αLmax = 22.2° ζ = 0.377 Mmax = 0.888
 αCMmin = 14.5° -CDmax = 16.1 αMmax = 21.1°

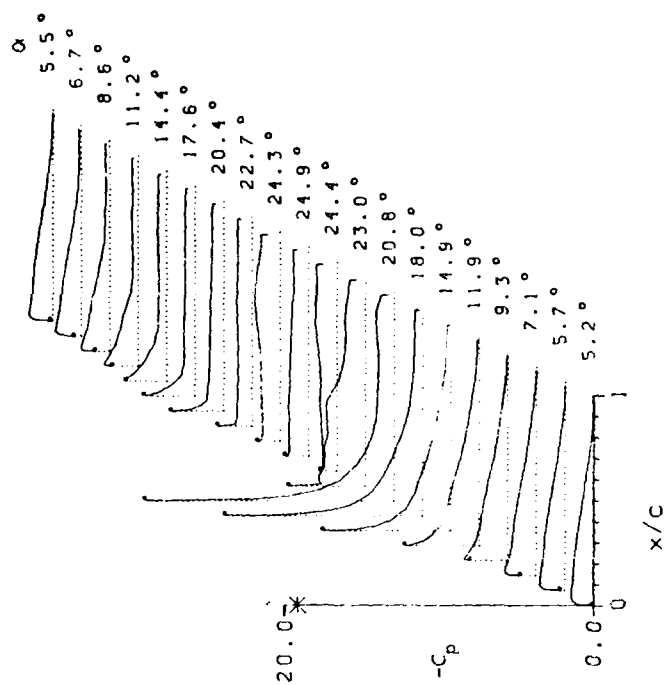
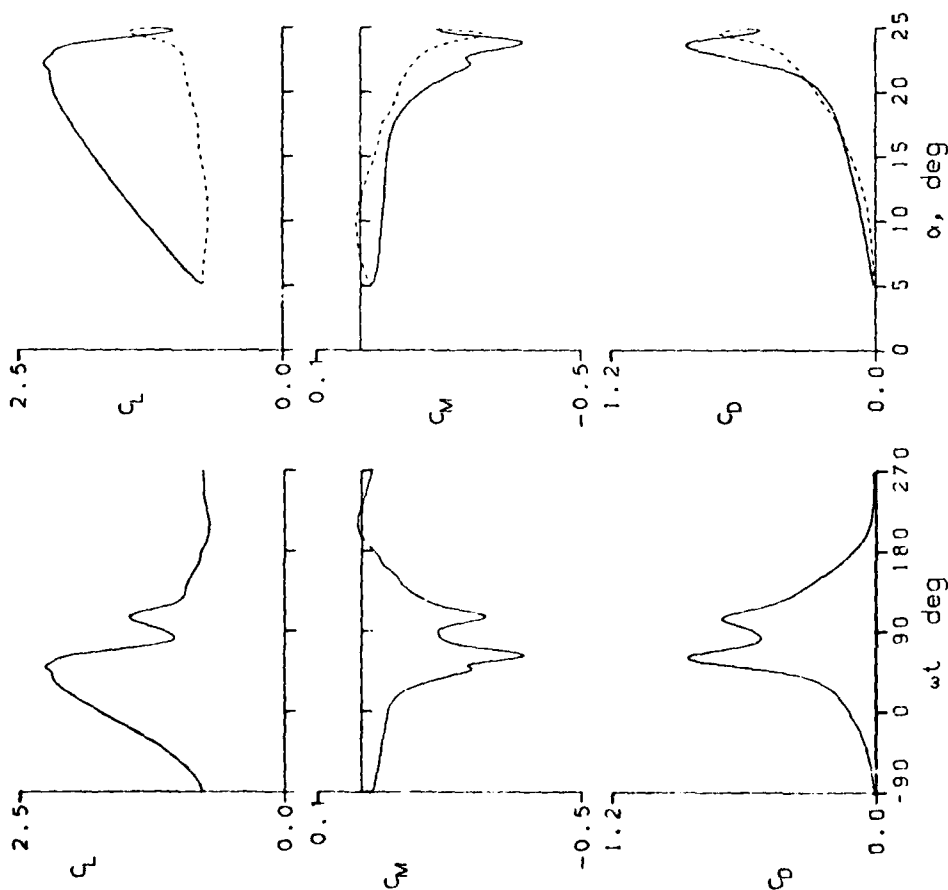


Figure 17.- Continued.

BOEING-VEPTEL VR-7 -WITH TAB- AIRFOIL TRIP

FRAME : 47114 A0 = 14.82° k = 0.151

Re = 2.58 E6 A1 = 9.88° M = 0.185

C_{Lmax} = 2.61 C_{Mmin} = -0.44 C_{Dmax} = 1.05

α_{Lmax} = 23.2° ξ = 0.273 M_{max} = 1.014

α_{Cmin} = 14.5° -C_{pmax} = 19.5 α_{Mmax} = 22.6°

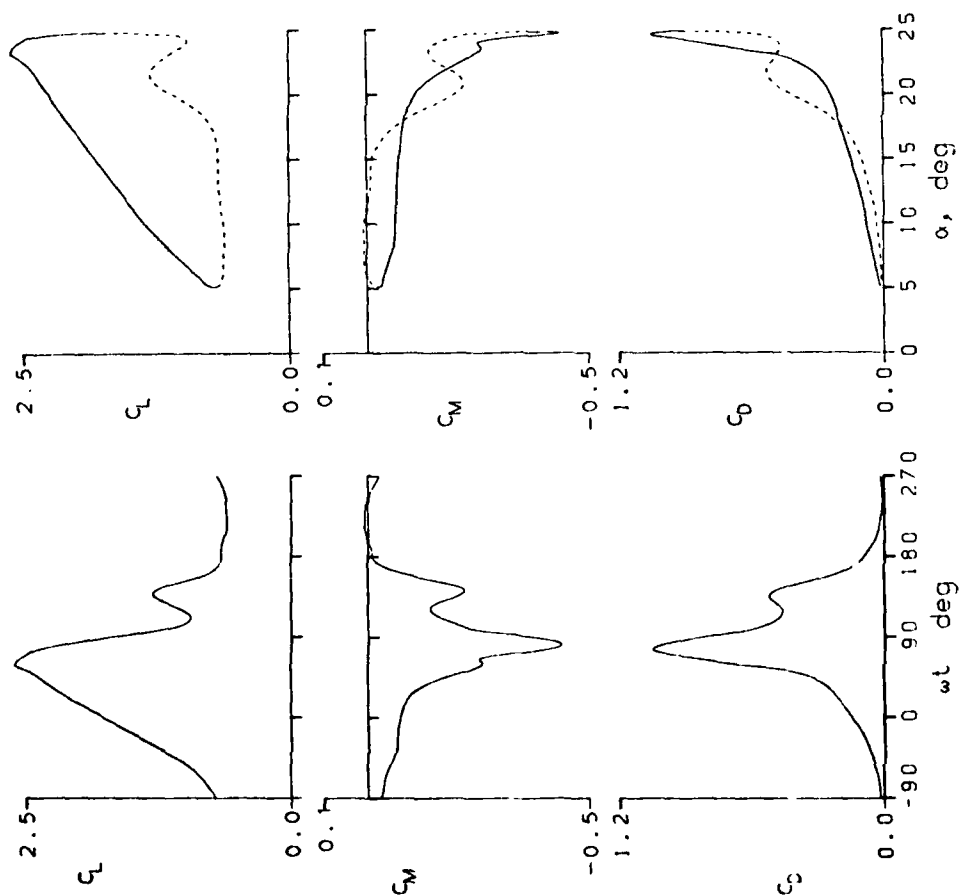


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 47123 A0 = 14.82° k = 0.101
 Re = 1.03 E6 A1 = 9.08° M = 0.073
 CLmax = 2.18 CMmin = -0.37 CDmax = 0.82
 αLmax = 21.9° ξ = 0.565 Mmax = 0.299
 αCMmin = 14.5° -CDmax = 15.2 αMmax = 20.8°

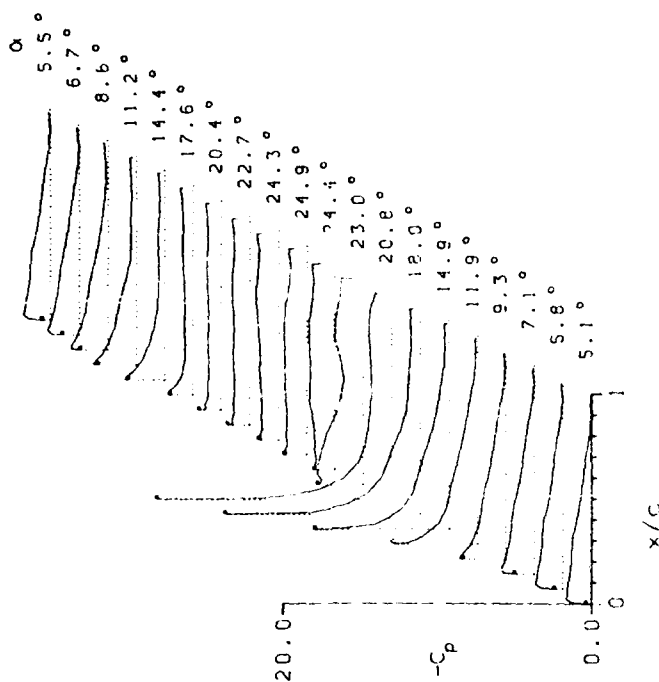
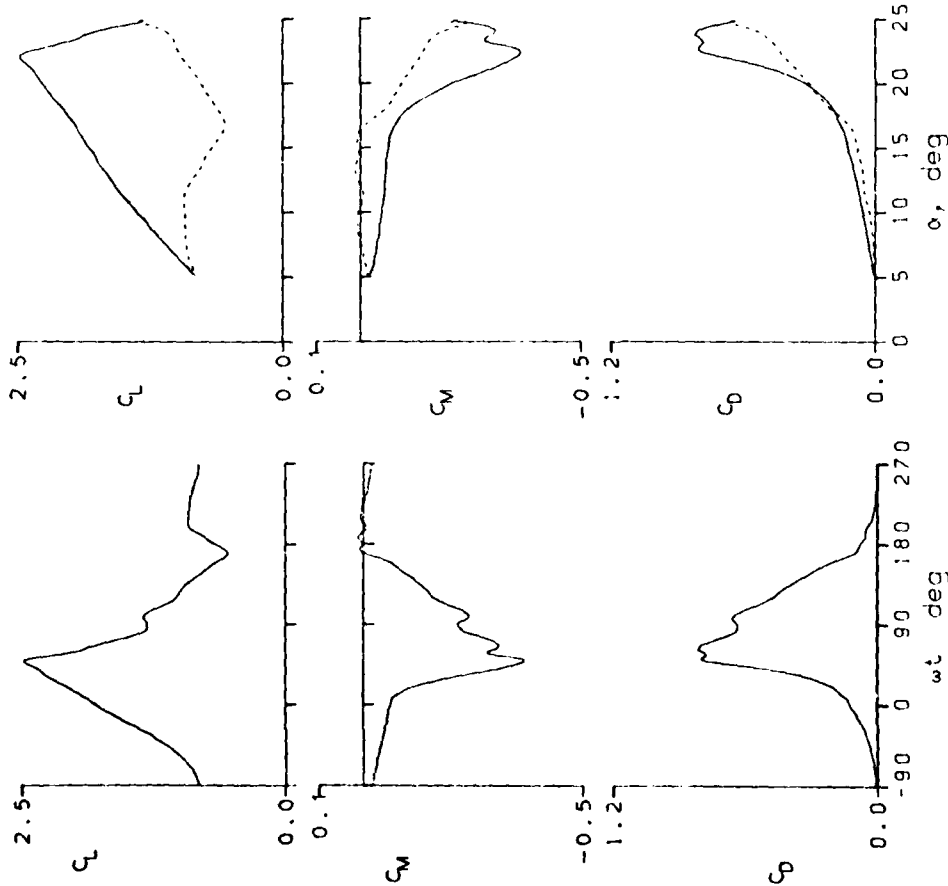


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 47206 $A_0 = 14.83^\circ$ $k = 0.101$
 $Re = 1.55 E6$ $A_1 = 9.88^\circ$ $M = 0.110$
 $C_{Lmax} = 2.42$ $C_{Mmin} = -0.41$ $C_{Dmax} = 0.94$
 $\alpha_{Lmax} = 22.8^\circ$ $\xi = 0.464$ $M_{max} = 0.460$
 $\alpha_{Cmin} = 14.5^\circ$ $-C_{pmax} = 16.3$ $\alpha_{Mmax} = 21.0^\circ$

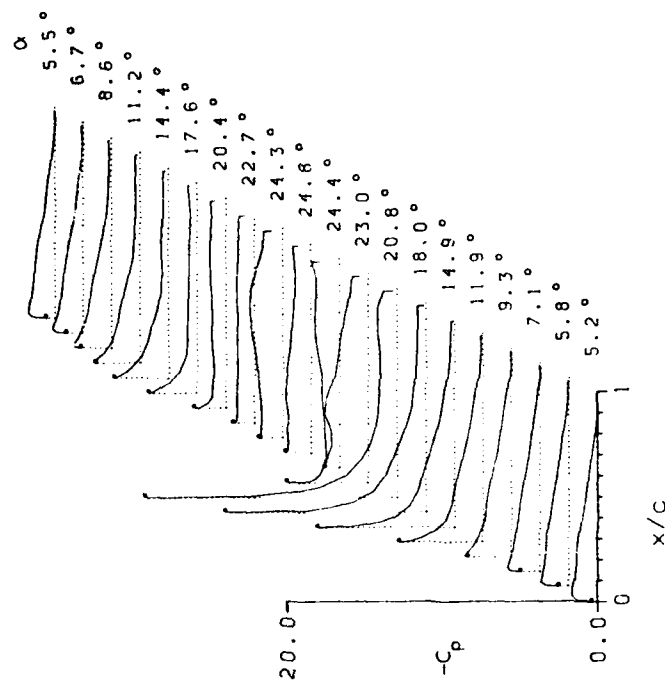
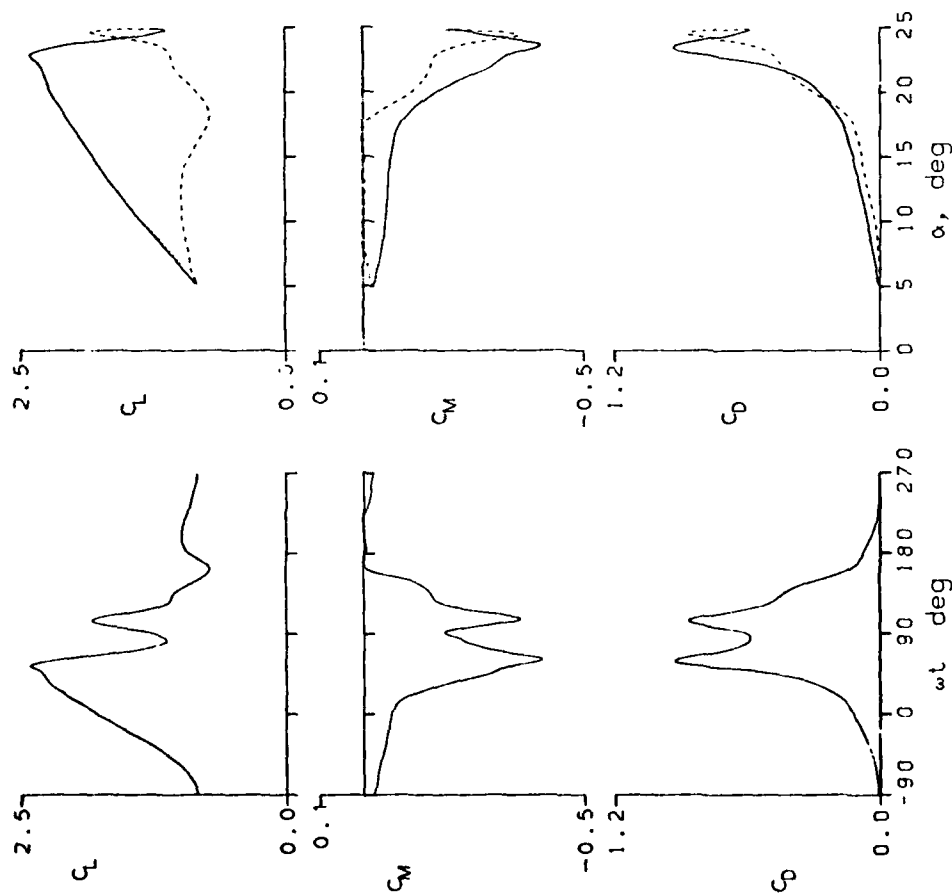


Figure 17.- Continued.

BOEING-VEPTEL VR-7 -WITH TAB- AIRFOIL

FRAME : 47213 $A_0 = 14.83^\circ$ $k = 0.102$

$Re = 2.61 \times 10^6$ $A_1 = 9.87^\circ$ $M = 0.185$

$C_{Lmax} = 2.37$ $C_{Mmin} = -0.43$ $C_{Dmax} = 0.98$

$\alpha_{Lmax} = 23.2^\circ$ $\zeta = 0.327$ $M_{max} = 0.963$

$\alpha_{Cmin} = 14.5^\circ$ $-C_{pmax} = 18.2$ $\alpha_{Mmax} = 21.8^\circ$

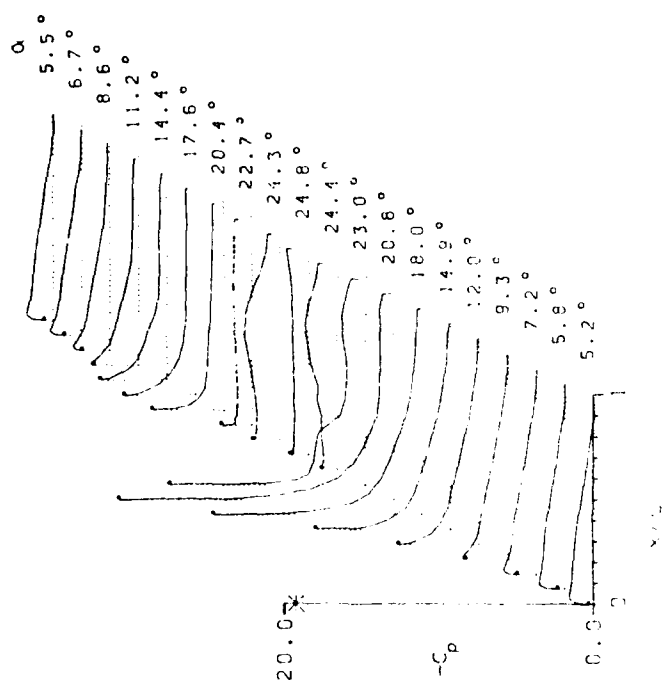
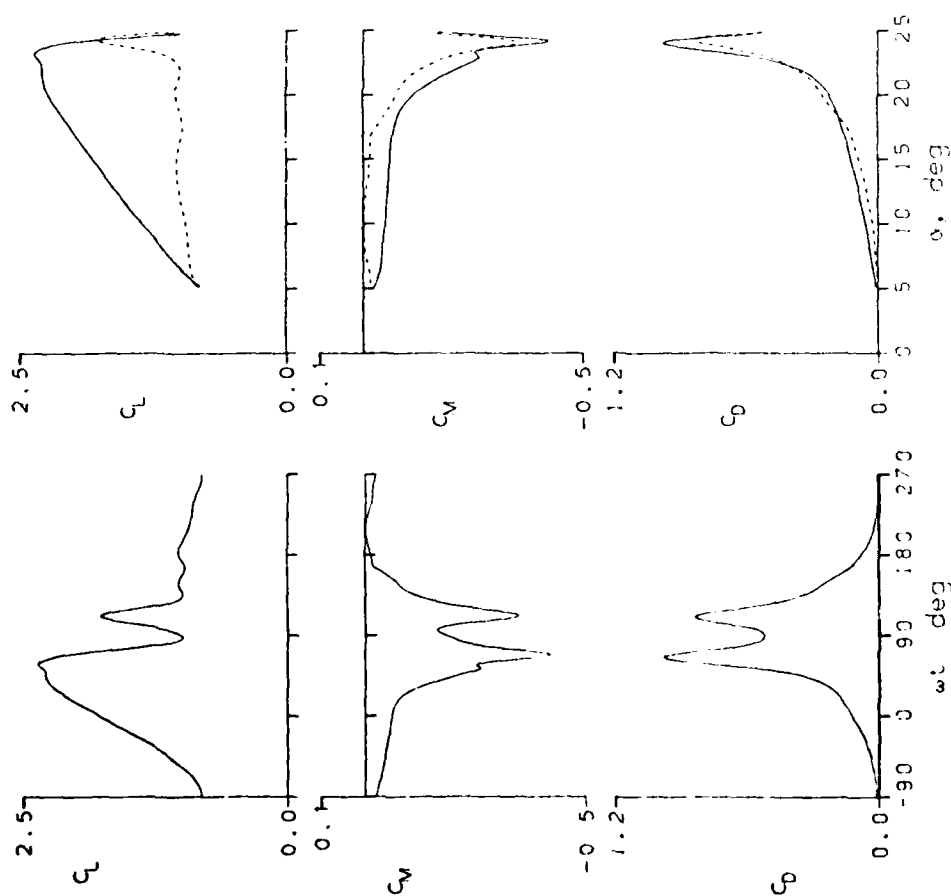


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 47217 $A_0 = 14.83^\circ$ $k = 0.101$
 $Re = 3.04 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.221$
 $C_{Lmax} = 2.48$ $C_{Mmin} = -0.42$ $C_{Dmax} = 0.96$
 $\alpha_{Lmax} = 21.7^\circ$ $\xi = 0.360$ $M_{max} = 1.207$
 $\alpha_{Cmin} = 14.5^\circ$ $-C_{Dmax} = 17.0$ $\alpha_{Mmax} = 20.8^\circ$

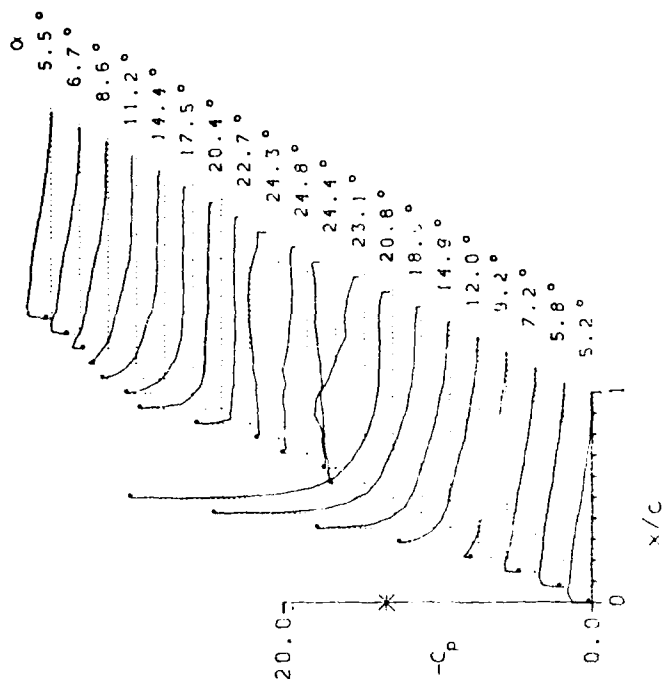
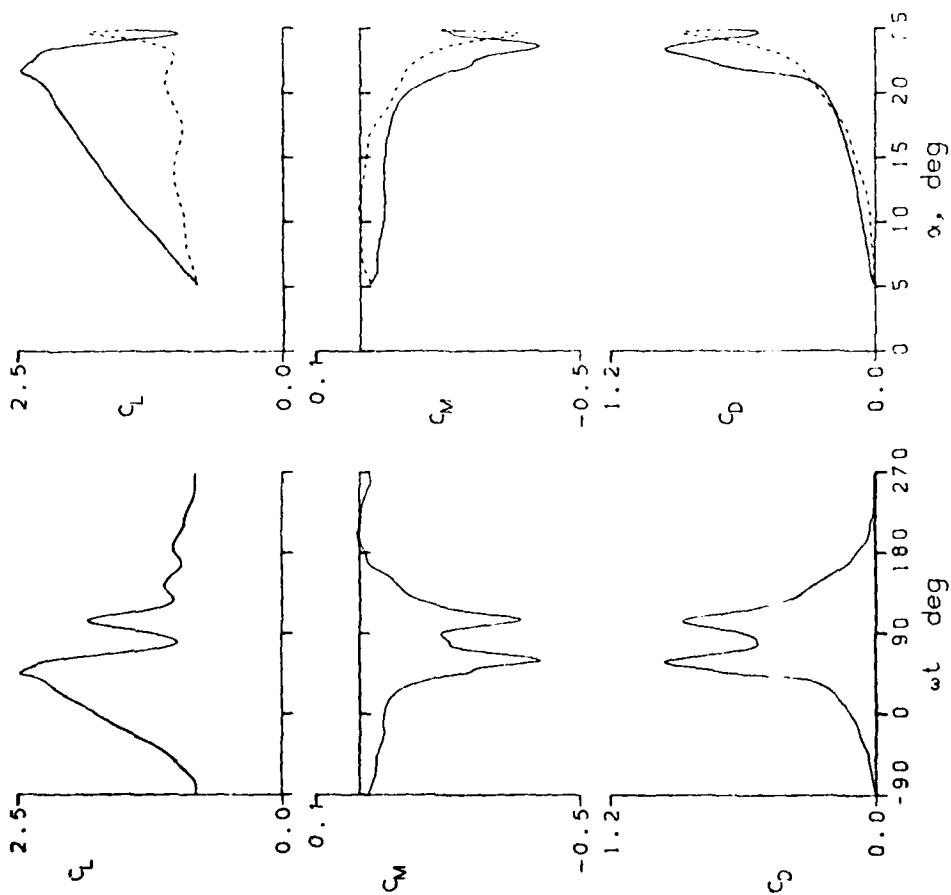


Figure 17.- Continued.

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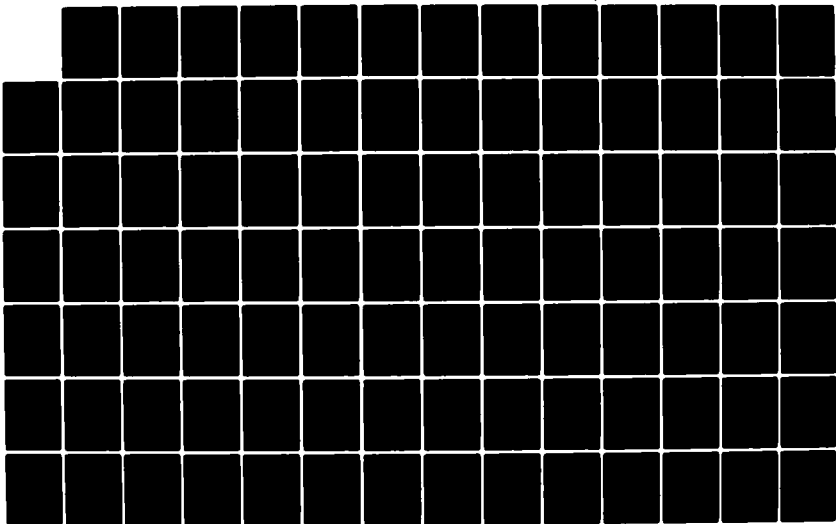
AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED
AIRFOIL SECTIONS VOLUM... (U) NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION MOFFETT FIELD CALIF.

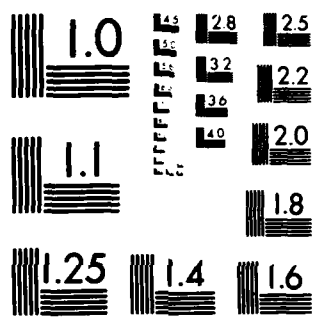
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BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAM : 47701	$A_0 = 14.87^\circ$	$\alpha = 0.101$
Re = 3.41 E6	$A_1 = 9.87^\circ$	$M = 0.250$
$C_{Lmax} = 2.39$	$C_{Mmin} = -0.43$	$C_{Dmax} = 0.93$
$\alpha_{Lmax} = 20.3^\circ$	$\xi = 0.424$	$M_{max} = 1.318$
$\alpha_{Cmin} = 14.5^\circ$	$-C_{Dmax} = 14.5$	$\alpha_{Mmax} = 19.4^\circ$

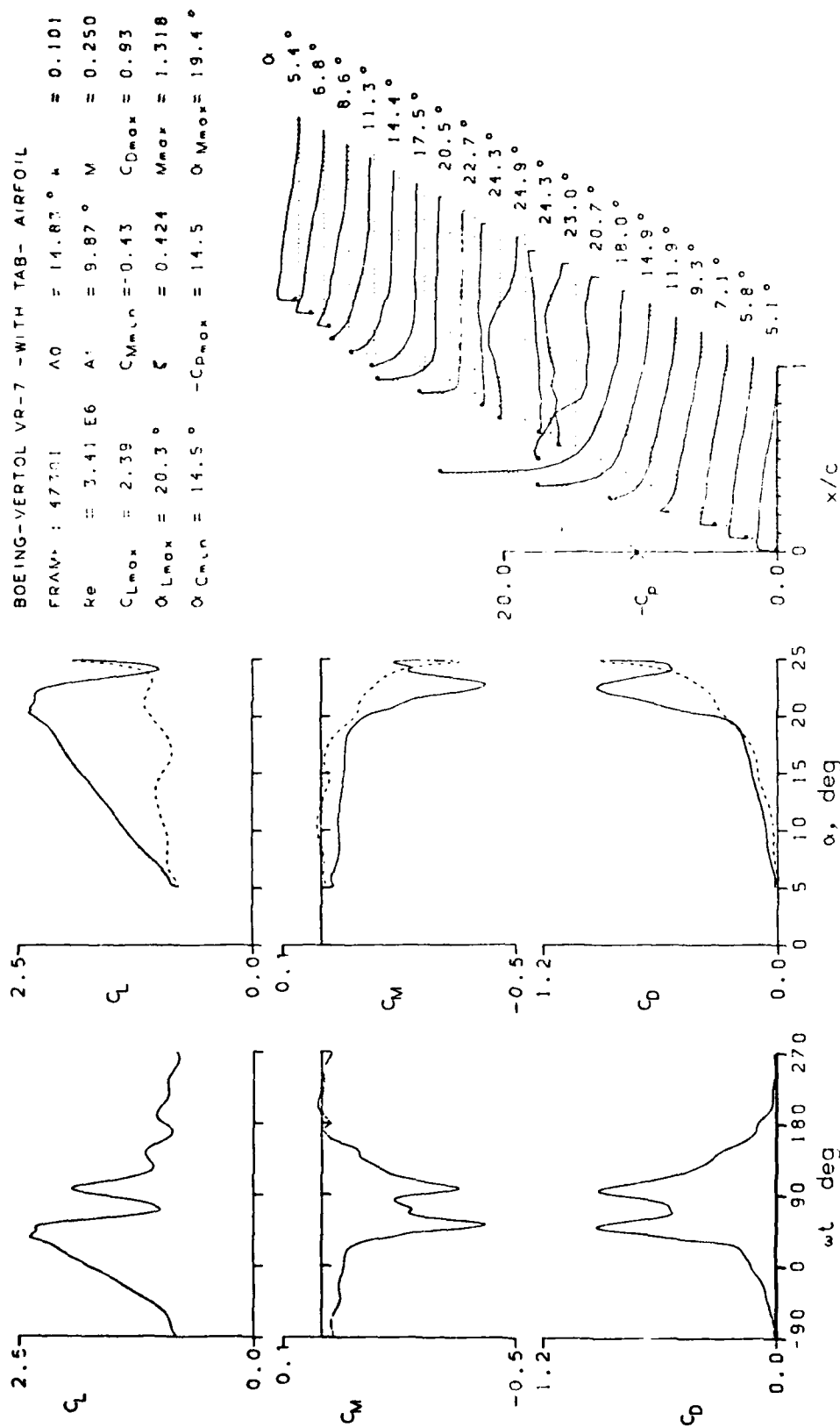


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 47305 $A_0 = 14.84^\circ$ $\mu = 0.100$
 $Re = 3.78 \text{ E}6$ $A_1 = 9.88^\circ$ $M = 0.281$
 $C_{Lmax} = 2.37$ $C_{Mmin} = -0.46$ $C_{Dmax} = 0.95$
 $\alpha_{Lmax} = 20.3^\circ$ $\zeta = 0.410$ $M_{max} = 1.434$
 $\alpha_{Cmin} = 14.6^\circ$ $-C_{Dmax} = 12.4$ $\alpha_{Mmax} = 18.6^\circ$

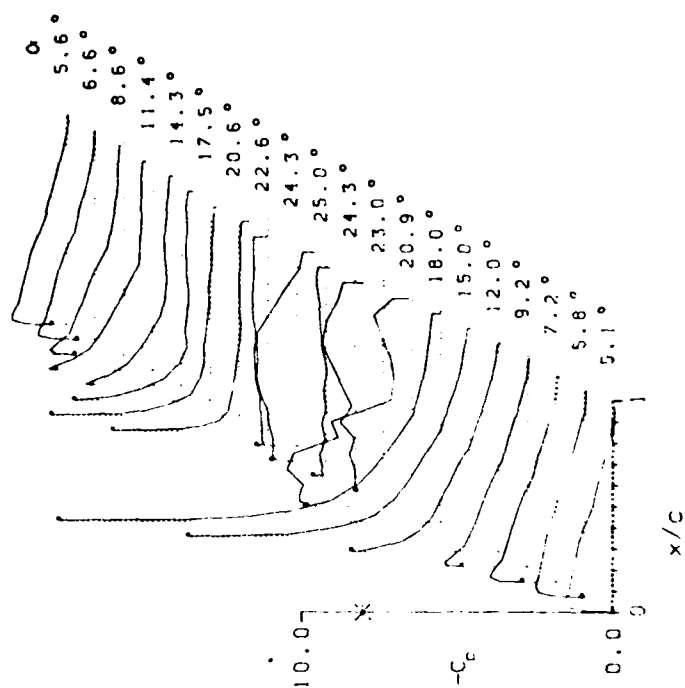
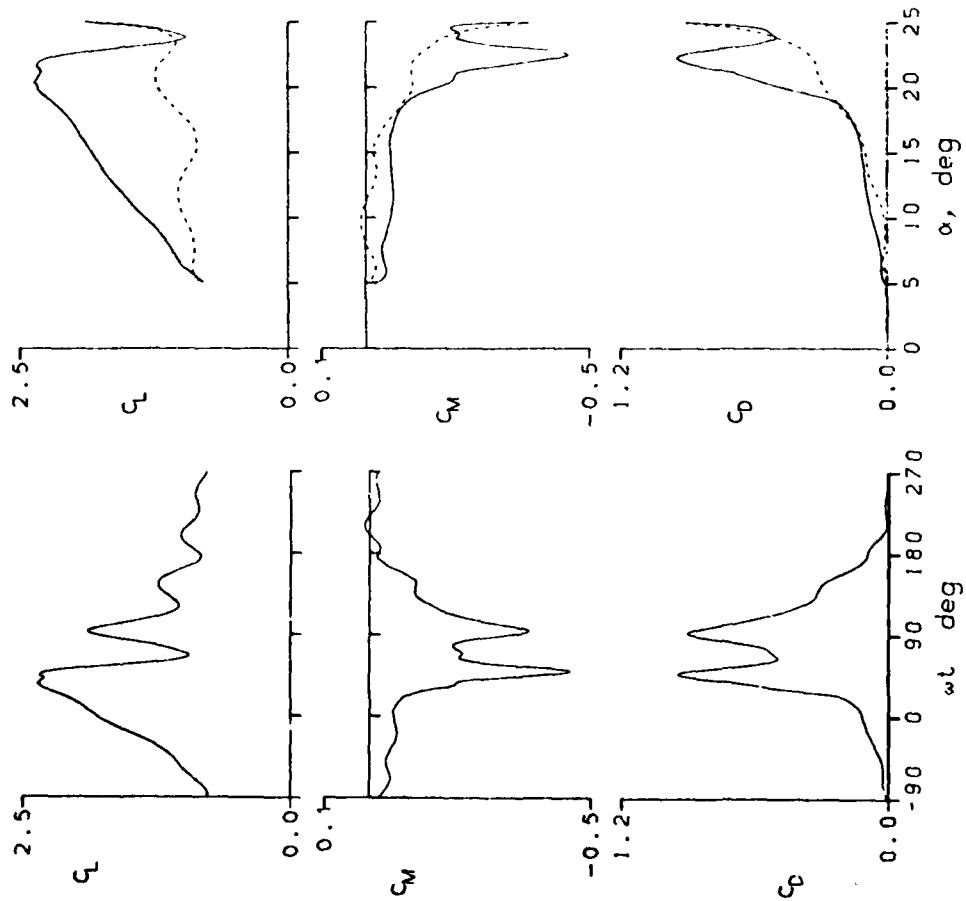


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48019	$A_0 = 3.95^\circ$	$k = 0.010$
$Re = 4.22 E6$	$A_1 = 10.10^\circ$	$M = 0.299$
$C_{Lmax} = 1.63$	$C_{Mmin} = -0.07$	$C_{Dmax} = 0.11$
$\alpha_{Lmax} = 13.4^\circ$	$\xi = 0.021$	$M_{max} = 1.068$
$\alpha_{Cmin} = 3.5^\circ$	$-C_{Dmax} = 7.7$	$\alpha_{Mmax} = 13.7^\circ$

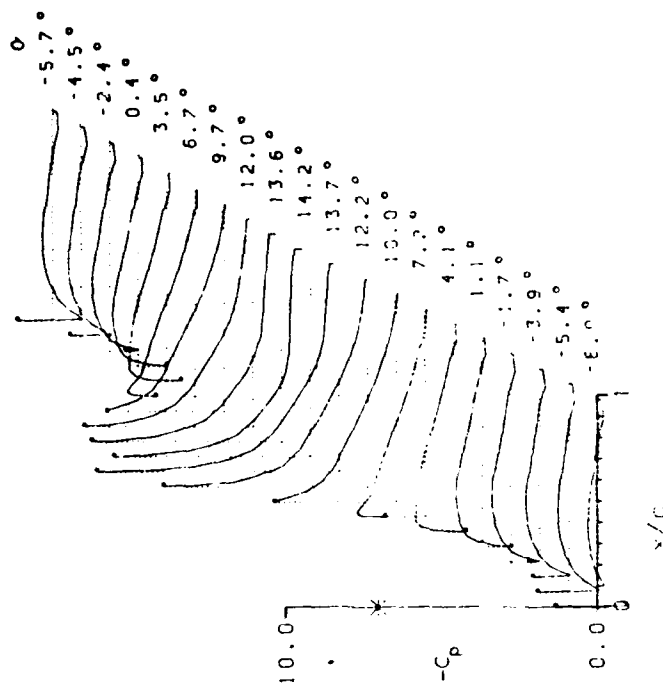
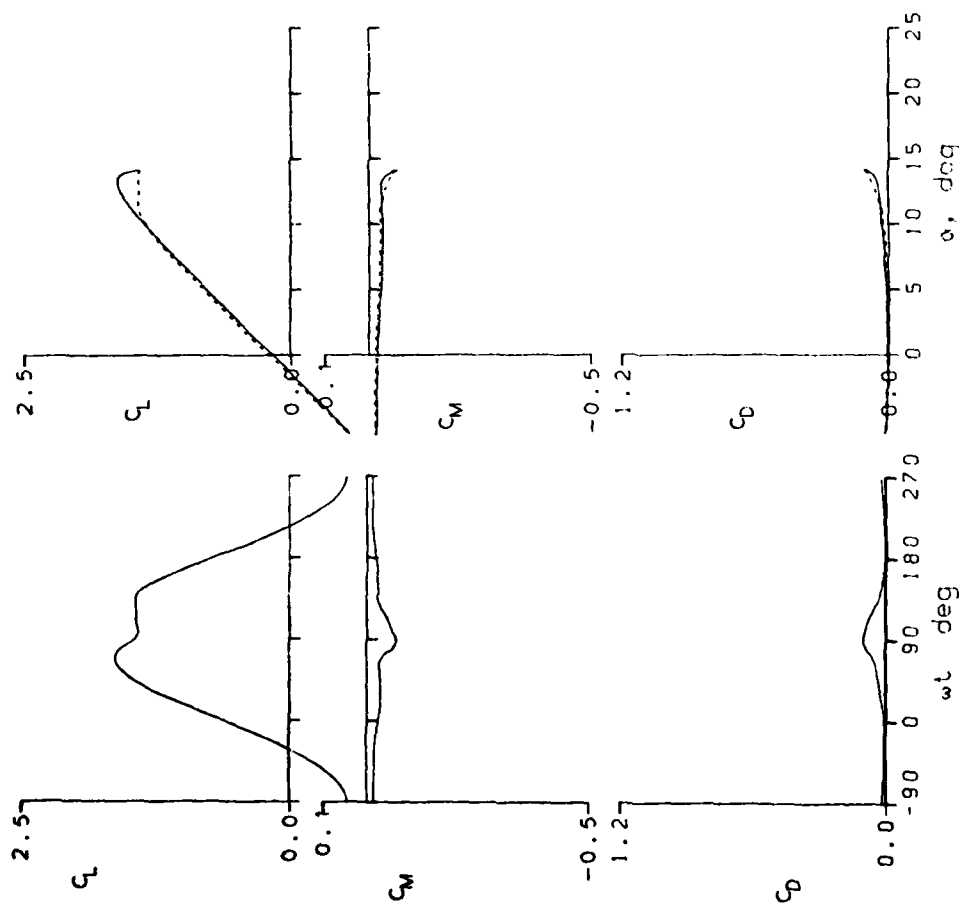


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48023	$A_0 = 3.95^\circ$	$k = 0.025$
$R_0 = 4.19$	$L_6 = 10.10^\circ$	$M = 0.300$
$C_{Lmax} = 1.68$	$C_{Mmin} = -0.07$	$C_{Dmax} = 0.10$
$\alpha_{Lmax} = 13.7^\circ$	$\xi = 0.058$	$M_{max} = 1.146$
$\alpha_{Cmin} = 3.5^\circ$	$-C_{Dmax} = 8.4$	$\alpha_{Mmax} = 14.0^\circ$

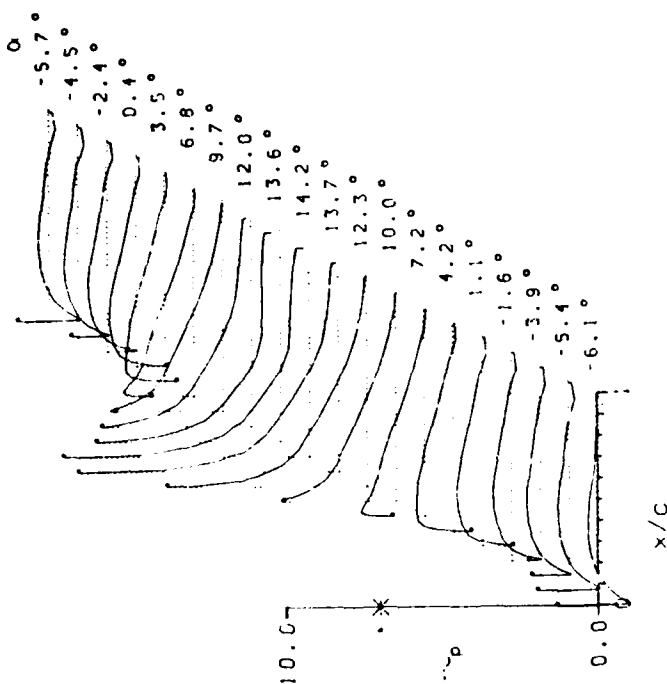
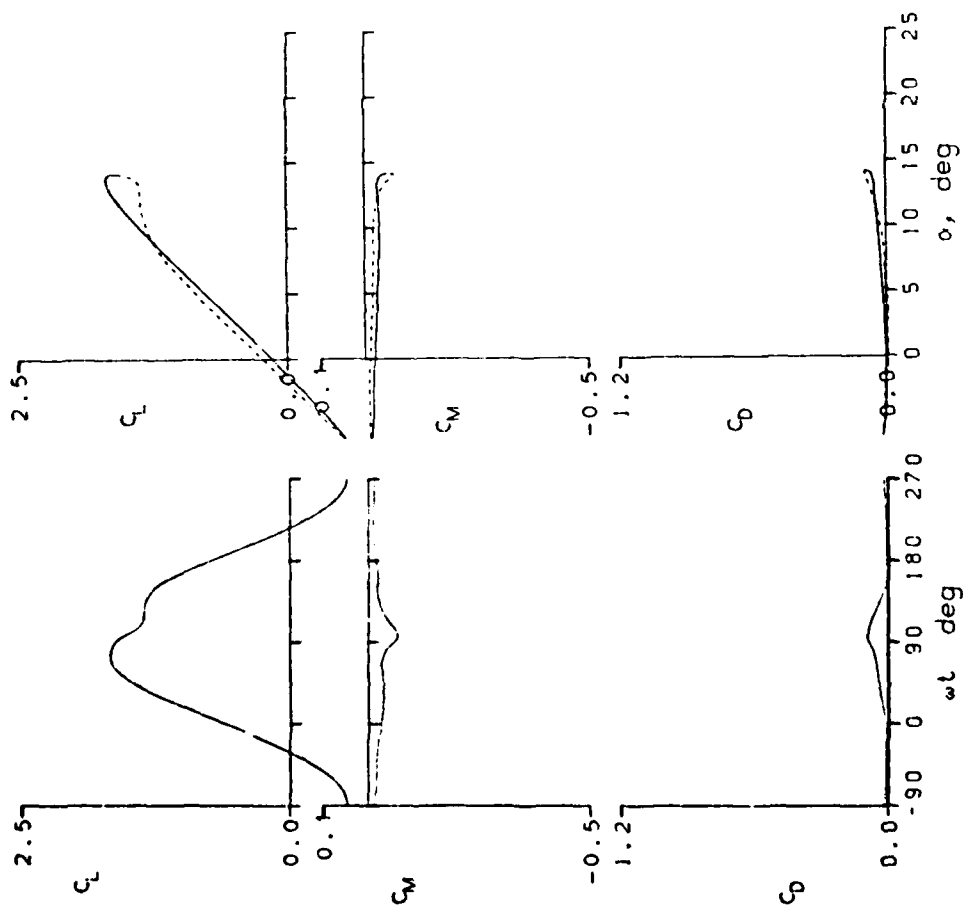


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB- AIRFOIL

FRAME : 48101	$A_0 = 3.95^\circ$	$b = 0.051$
$Re = 4.16 \text{ E}6$	$A_1 = 10.10^\circ$	$M = 0.299$
$C_{Lmax} = 1.73$	$C_{Mmin} = -0.05$	$C_{Dmax} = 0.07$
$\alpha_{Lmax} = 14.0^\circ$	$\zeta = 0.130$	$M_{max} = 1.216$
$\alpha_{Cmin} = 3.5^\circ$	$-C_{pmax} = 9.1$	$\alpha_{Mmax} = 14.2^\circ$

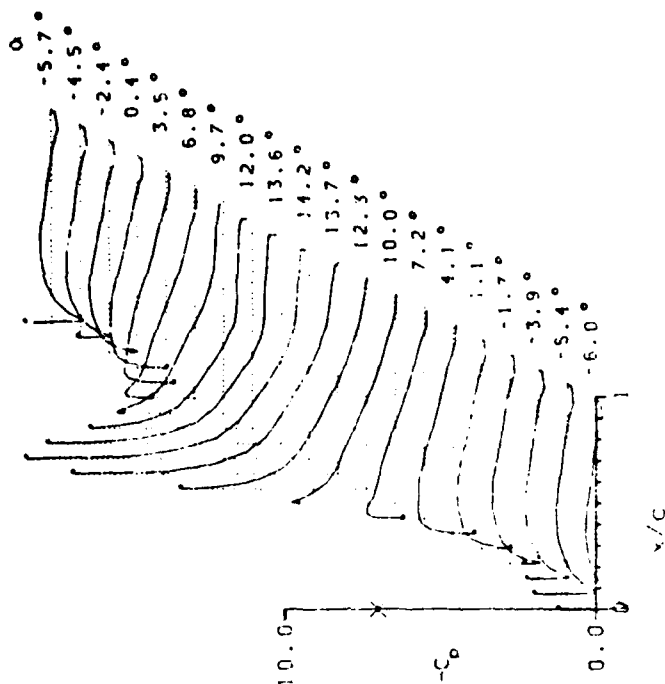
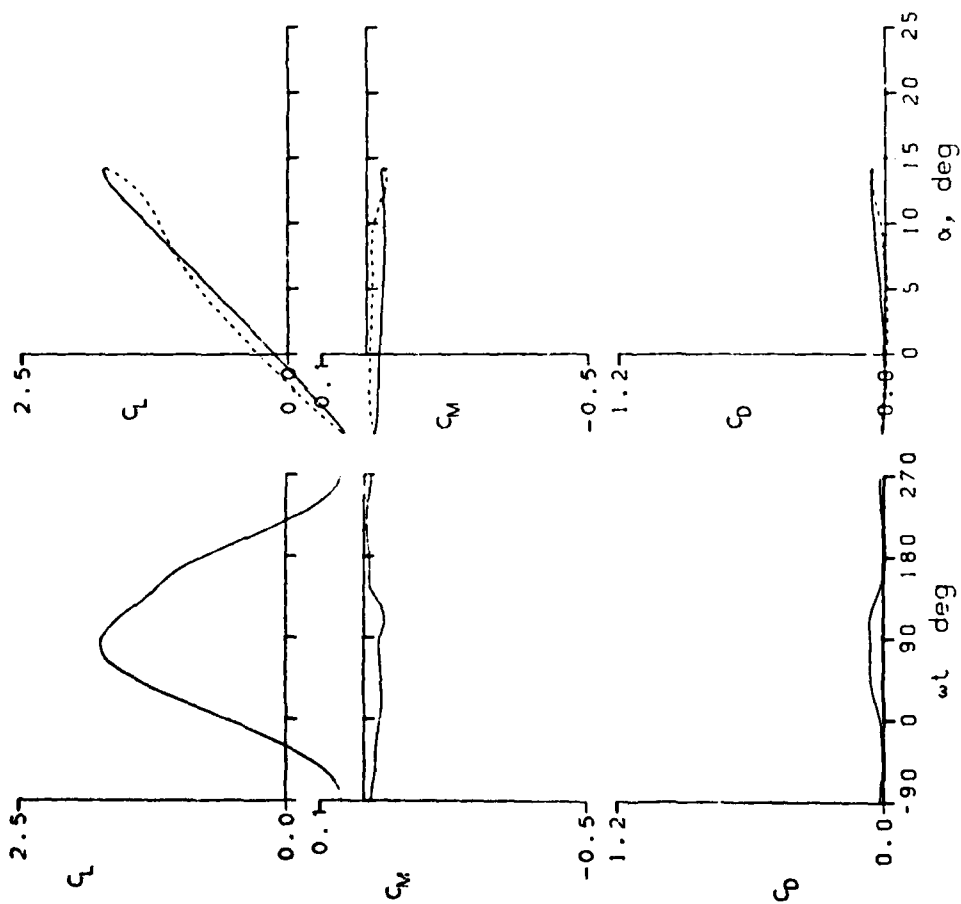


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAM1: 48103 $A_0 = 3.95^\circ$ $k = 0.102$
 $Re = 4.15 \text{ E}6$ $A1 = 10.10^\circ$ $M = 0.300$
 $C_{Lmax} = 1.78$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.09$
 $\alpha_{Lmax} = 14.2^\circ$ $\zeta = 0.307$ $M_{max} = 1.271$
 $\alpha_{Cmin} = 3.5^\circ$ $-C_{Dmax} = 9.6$ $\alpha_{Mmax} = 14.1^\circ$

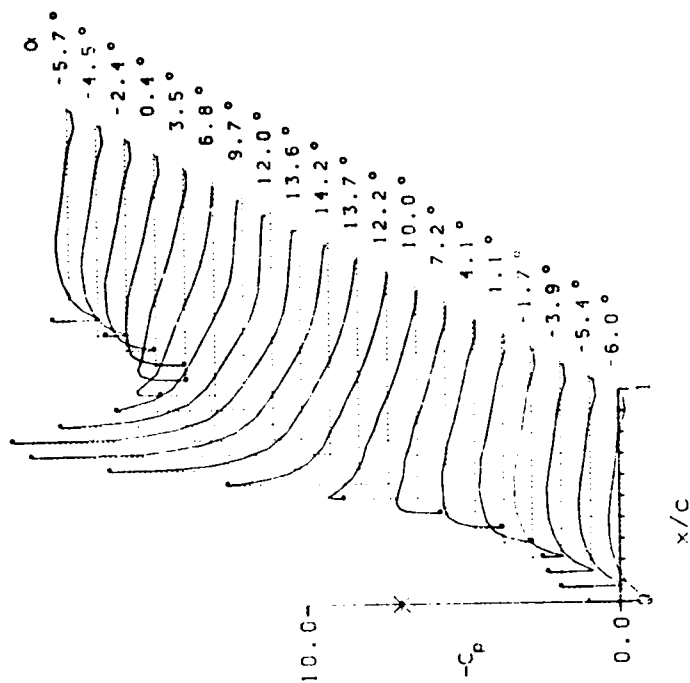
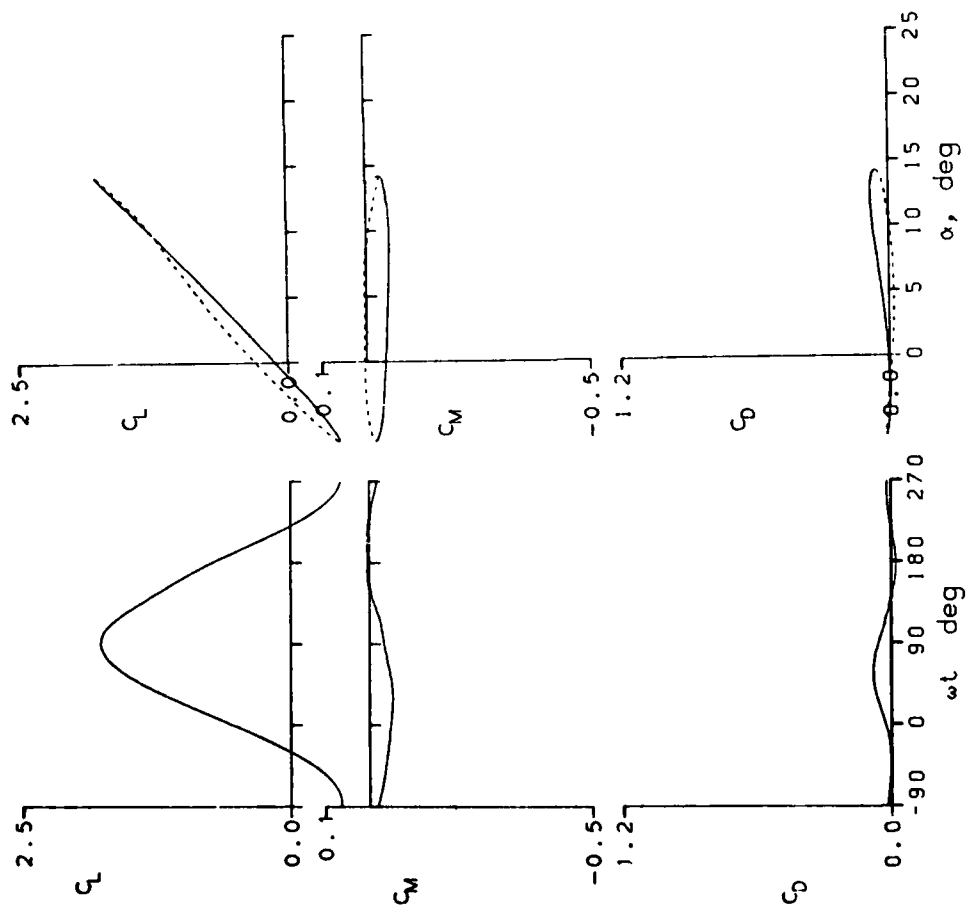


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAVE : 48115 $A_0 = 13.00^\circ$ $k = 0.025$
 $Re = 4.08 \text{ E}6$ $A_1 = 2.00^\circ$ $M = 0.299$
 $C_{L_{max}} = 1.63$ $C_{M_{min}} = -0.08$ $C_{D_{max}} = 0.13$
 $\alpha_{L_{max}} = 13.5^\circ$ $\zeta = -0.151$ $M_{max} = 1.070$
 $\alpha_{C_{min}} = 12.9^\circ$ $-C_{D_{min}} = 7.7$ $\alpha_{M_{max}} = 13.9^\circ$

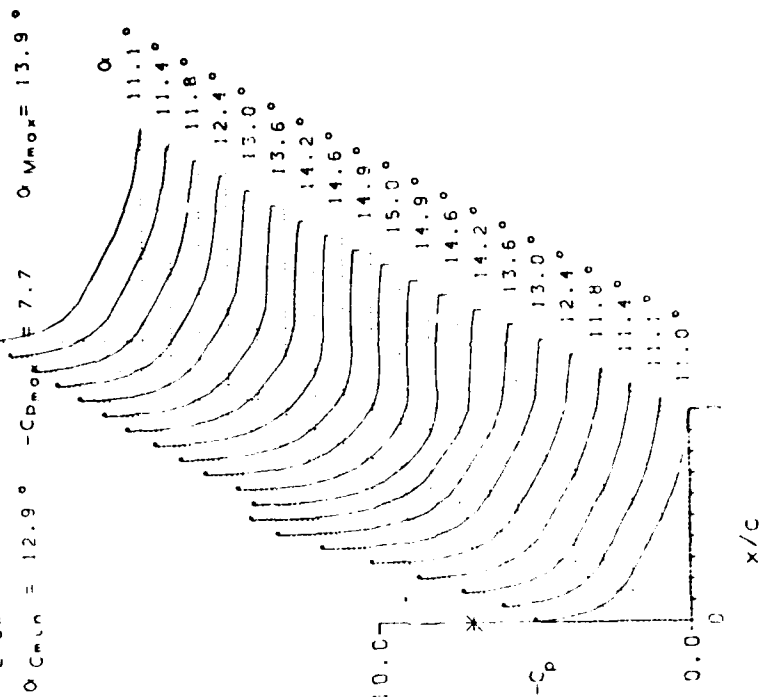
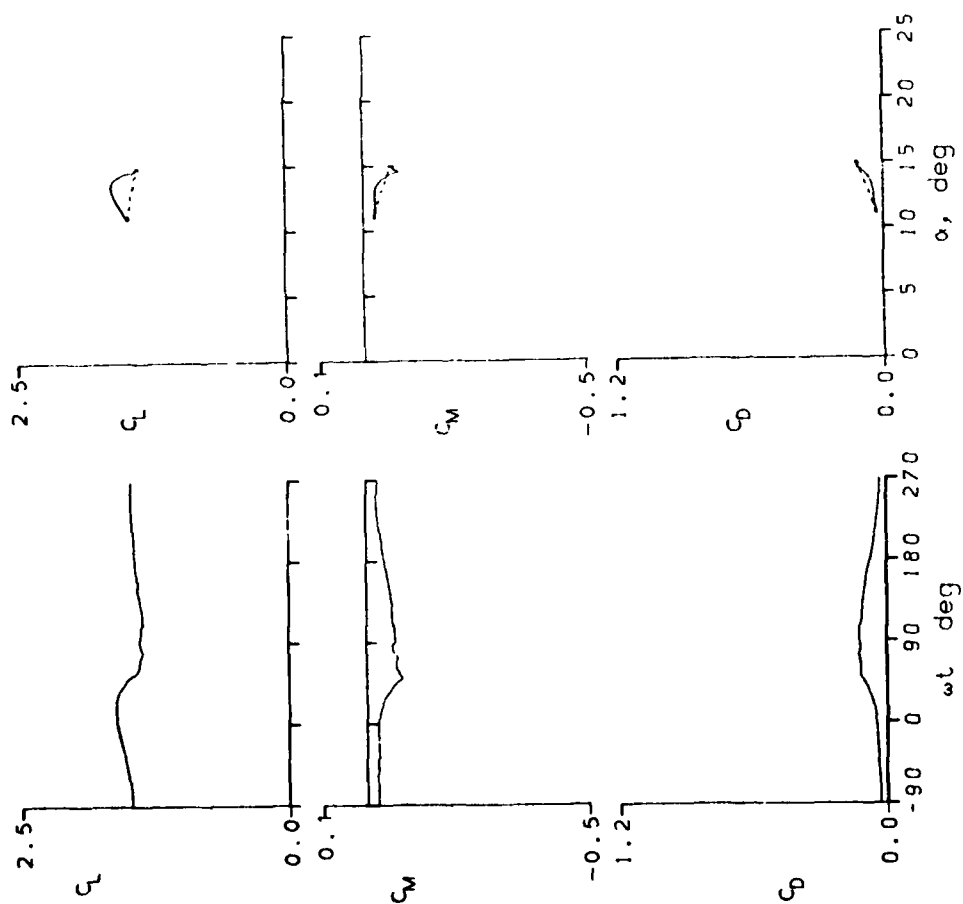


Figure 17.- Continued.

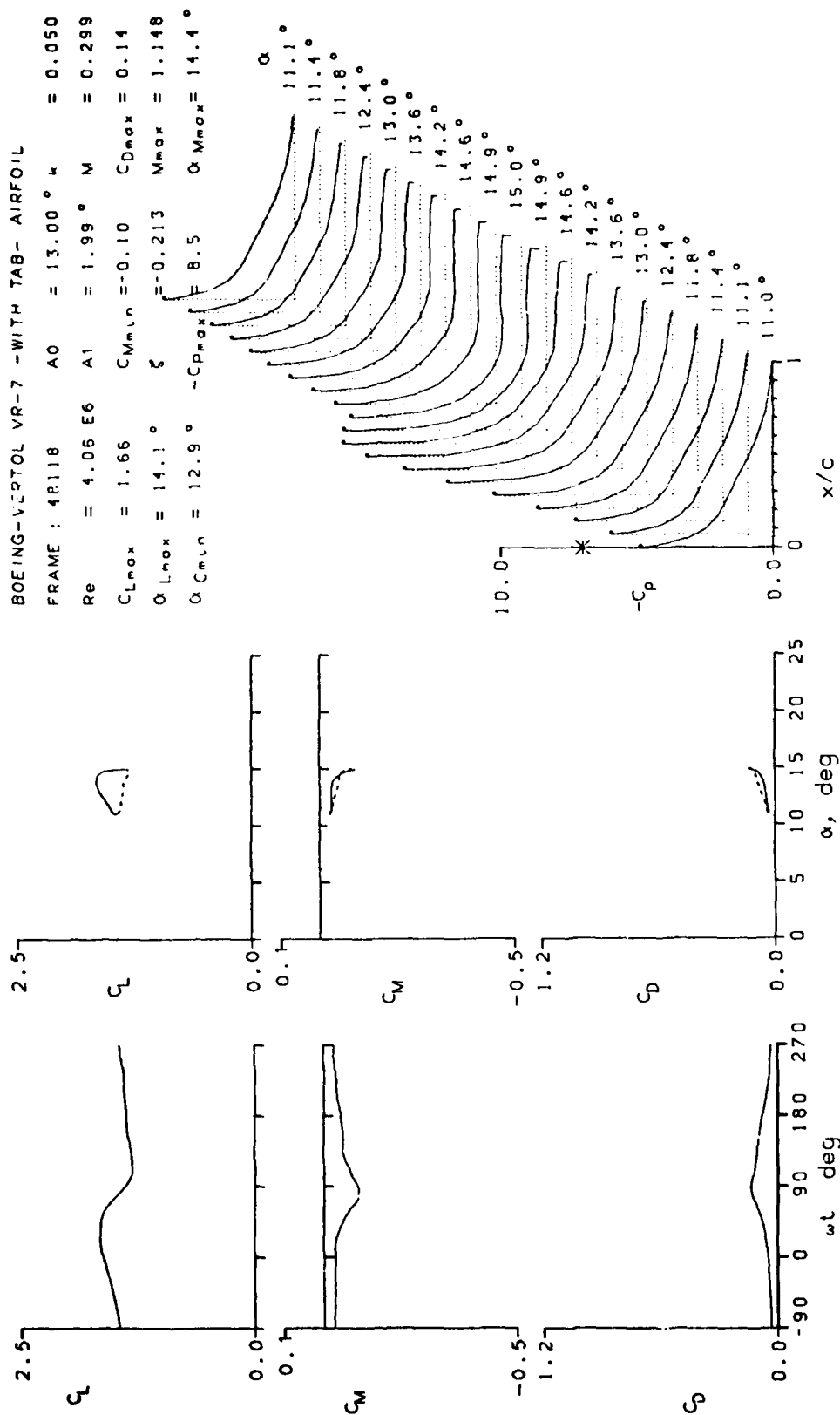


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB- AIRFOIL

FRAME : 48122 $A_0 = 12.99^\circ$ $k = 0.101$

$Re = 4.06 \text{ E}6$ $A_1 = 2.00^\circ$ $M = 0.299$

$C_{Lmax} = 1.73$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.14$

$\alpha_{Lmax} = 14.5^\circ$ $\xi = -0.339$ $M_{max} = 1.234$

$\alpha_{Cmin} = 12.9^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.8^\circ$

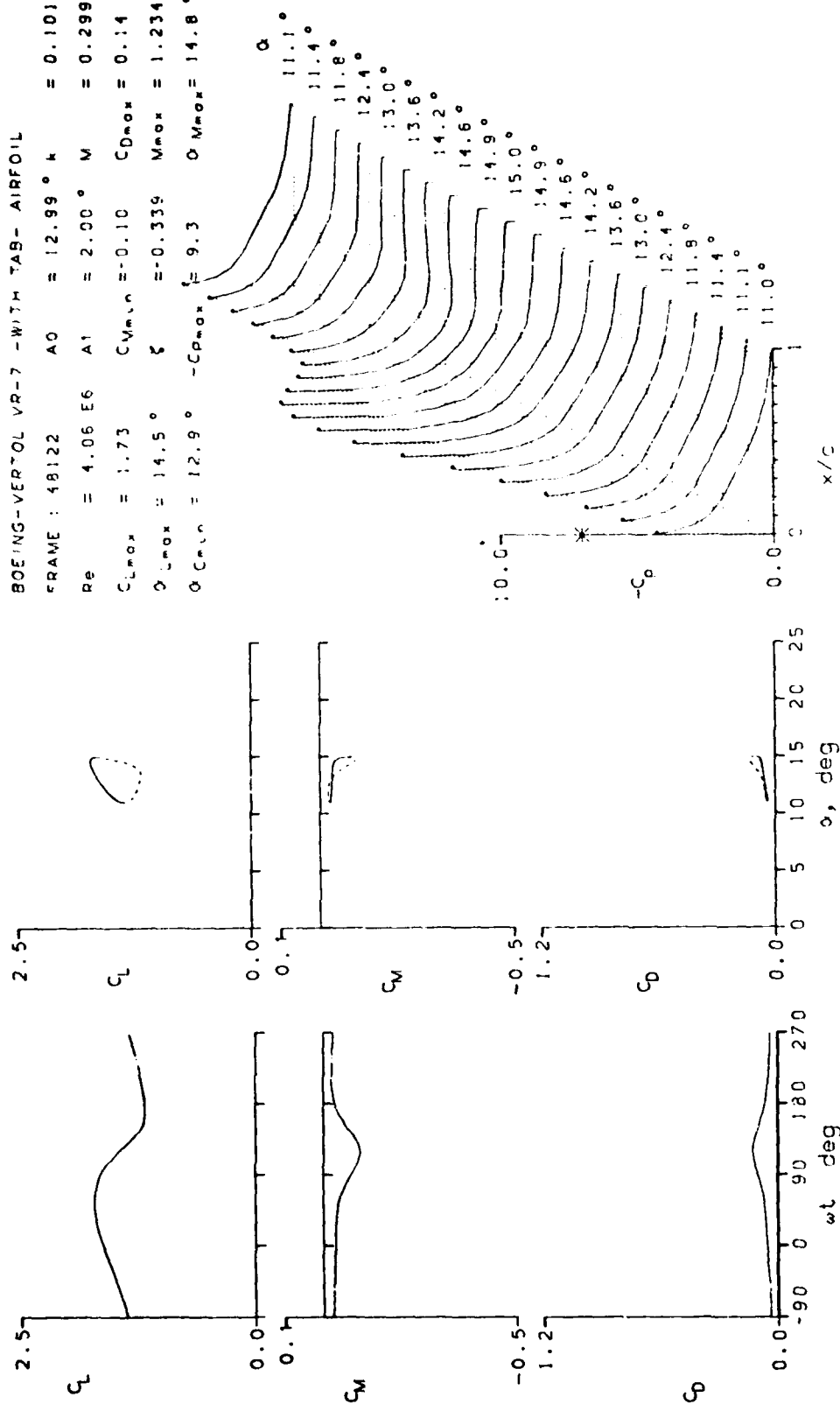


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48209	$A_0 = 15.95^\circ$	$k = 0.203$
$Re = 4.06 \times 10^6$	$A_1 = 2.00^\circ$	$M = 0.298$
$C_{Lmax} = 1.87$	$C_{Mmin} = -0.31$	$C_{Dmax} = 0.46$
$\alpha_{Lmax} = 17.9^\circ$	$\xi = 0.060$	$M_{max} = 1.359$
$\alpha_{Cmin} = 15.8^\circ$	$-C_{Dmax} = 10.4$	$\alpha_{Mmax} = 17.6^\circ$

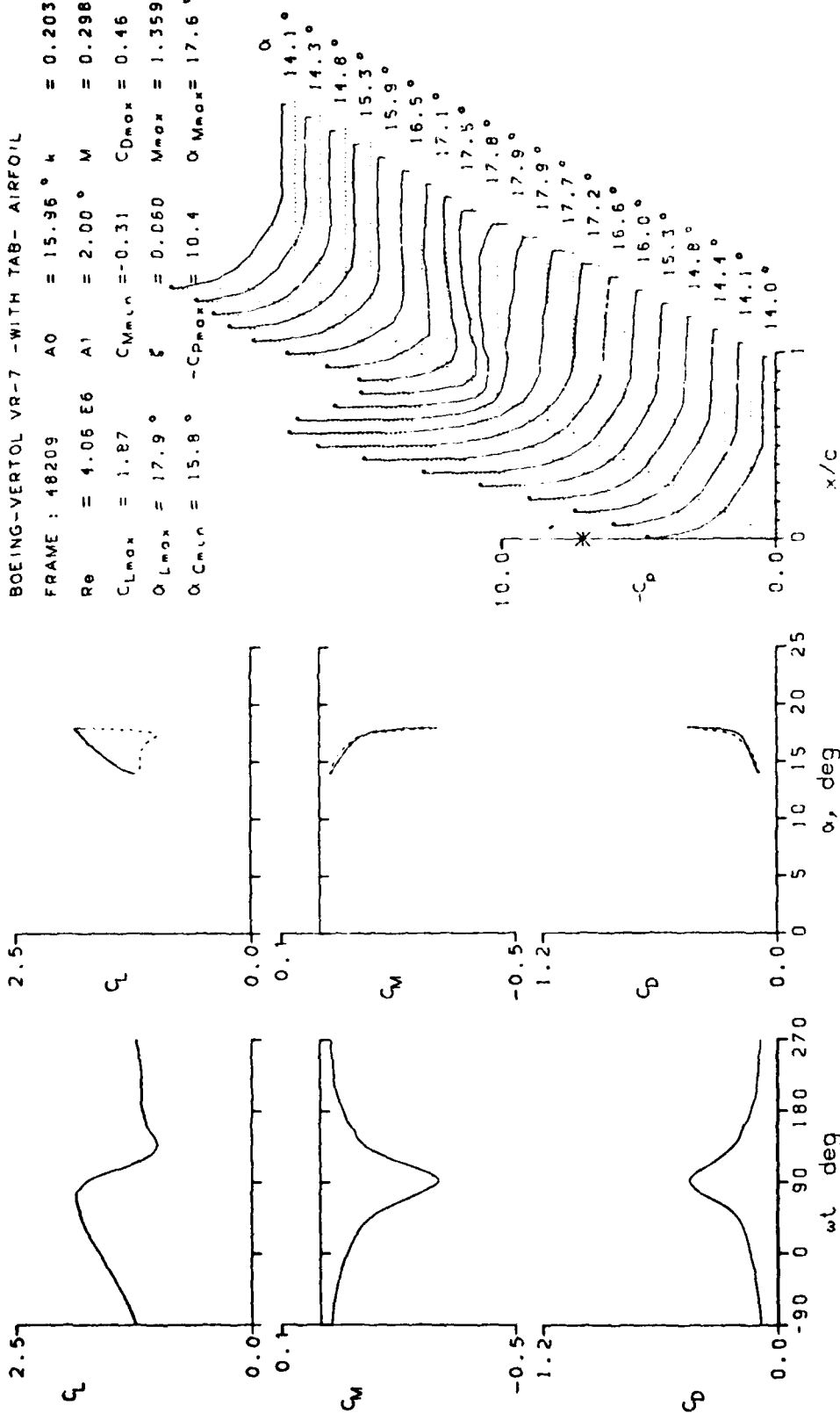


Figure 17.- Continued.

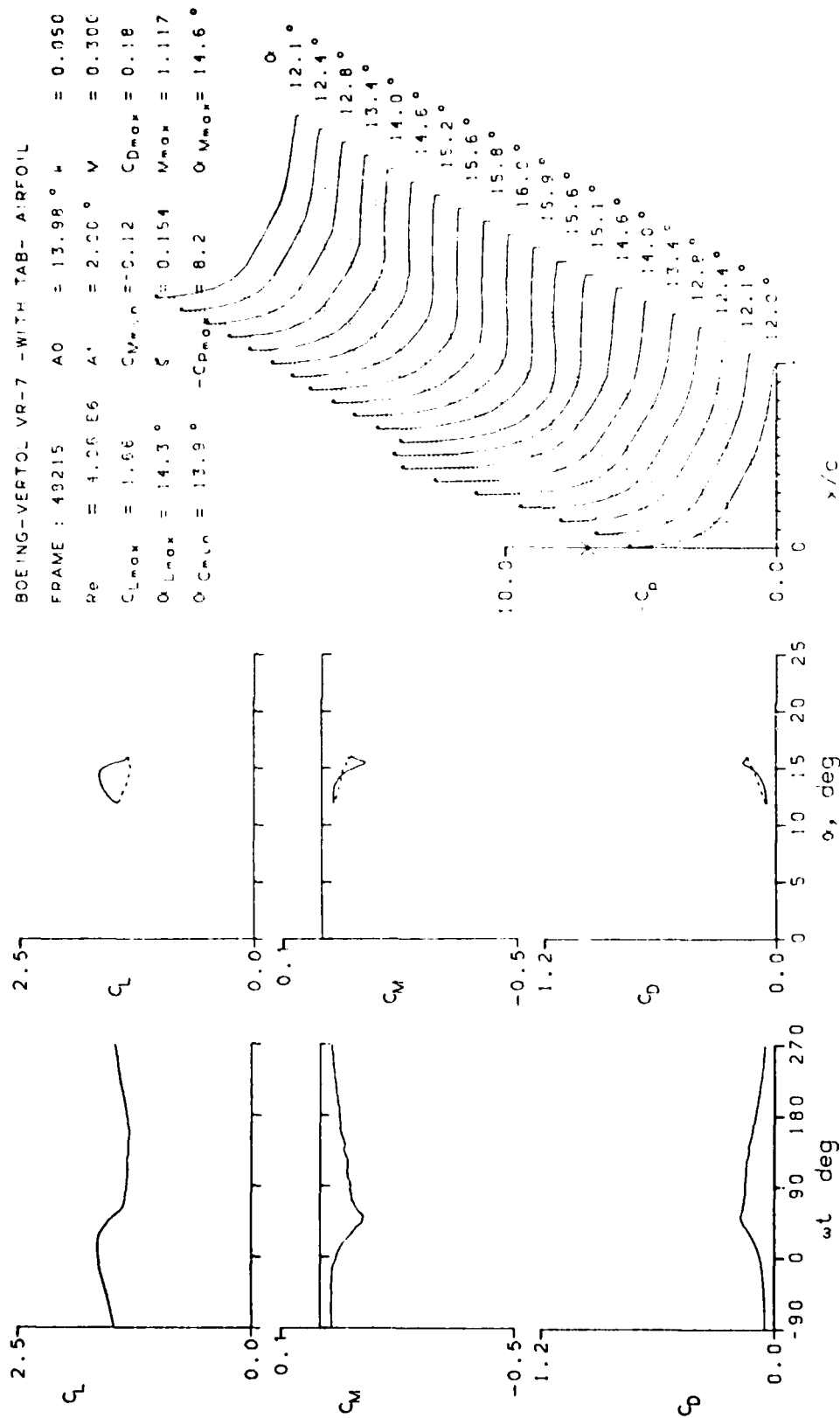


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48216 $AO = 13.99^\circ$ $k = 0.101$

$Re = 4.05 \times 10^6$ $A' = 1.99^\circ$ $M = 0.300$

$C_{Lmax} = 1.74$ $C_{Mmin} = -0.16$ $C_{Dmax} = 0.23$

$\alpha_{Lmax} = 15.2^\circ$ $\xi = 0.456$ $M_{max} = 1.238$

$\alpha_{Cmin} = 14.0^\circ$ $-C_{Pmax} = 9.3$ $\alpha_{Mmax} = 15.3^\circ$

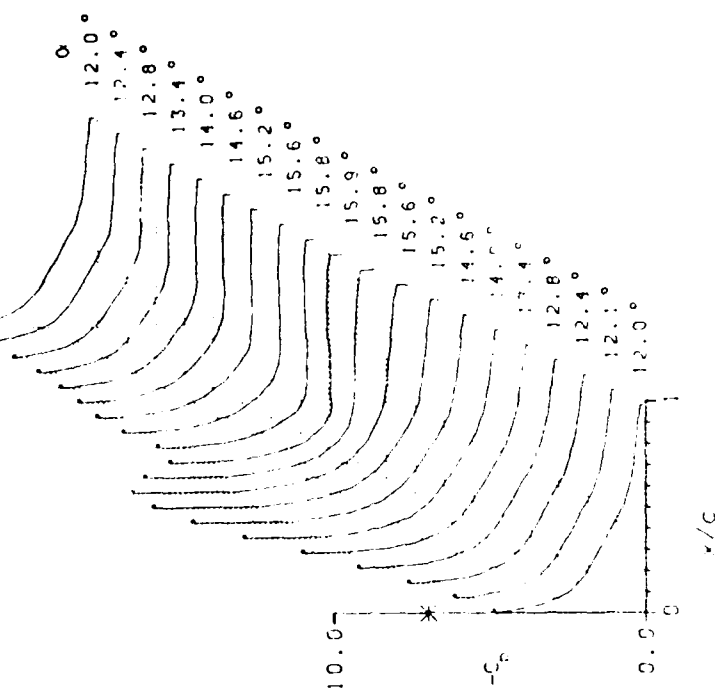
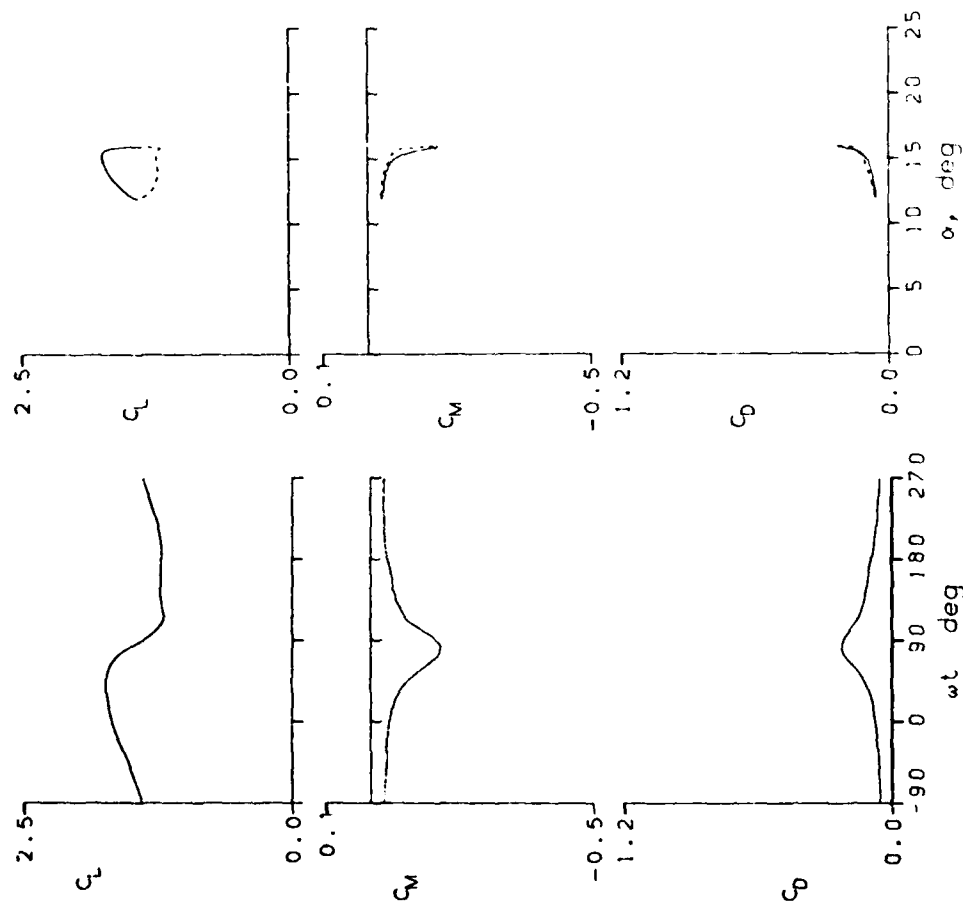


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB - AIRFOIL
 FRAYE : 48217 $\alpha_0 = 13.98^\circ$ $\mu = 0.201$
 $Re = 4.04 \times 10^6$ $A^* = 2.00^\circ$ $M = 0.300$
 $C_{Lmax} = 1.85$ $C_{Mmin} = -0.19$ $C_{Dmax} = 0.25$
 $\alpha_{Lmax} = 16.0^\circ$ $\xi = -1.992$ $M_{max} = 1.374$
 $\alpha_{Cmin} = 13.9^\circ$ $-C_{Dmax} = 10.4$ $\alpha_{Vmax} = 16.0^\circ$

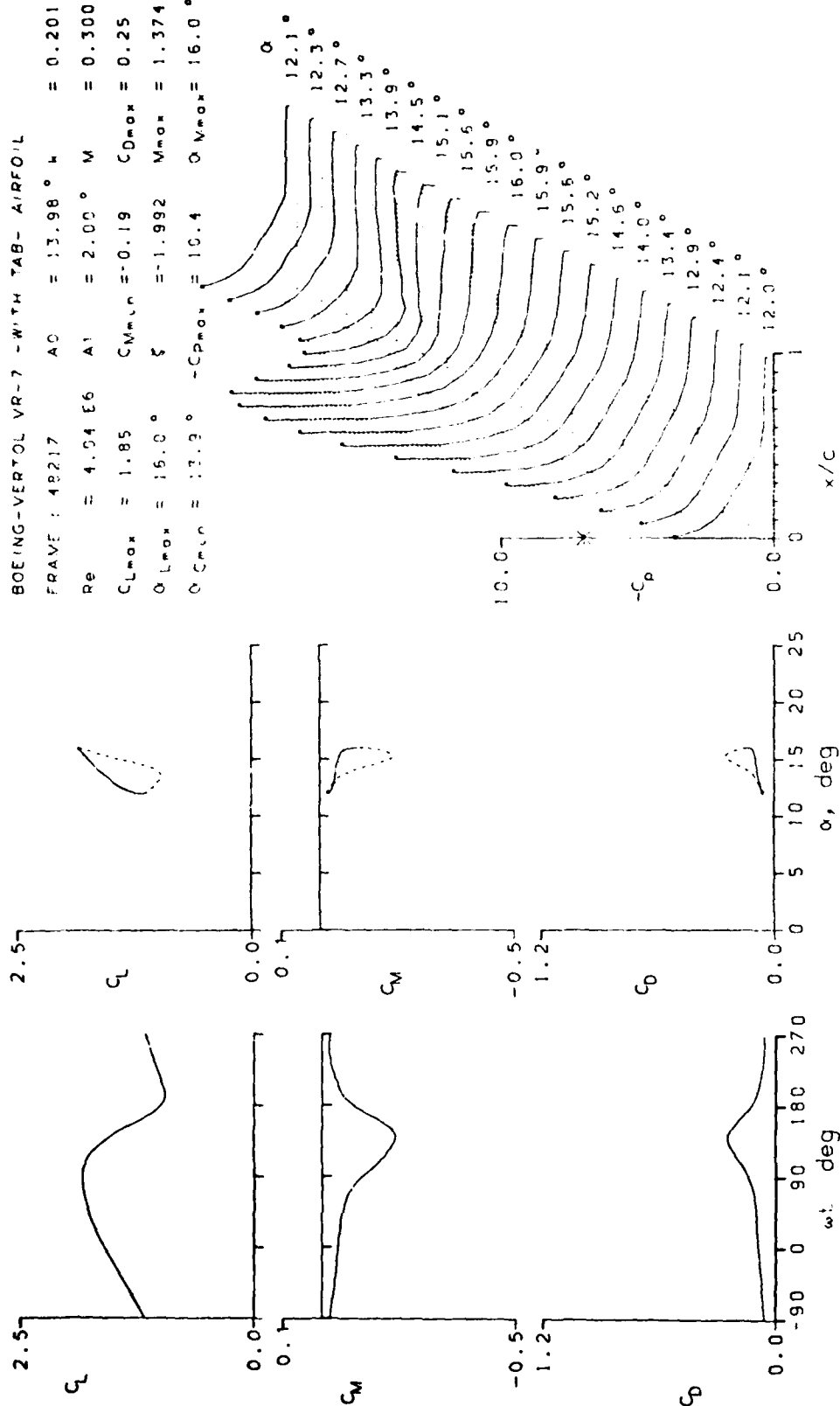


Figure 17.- Continued.

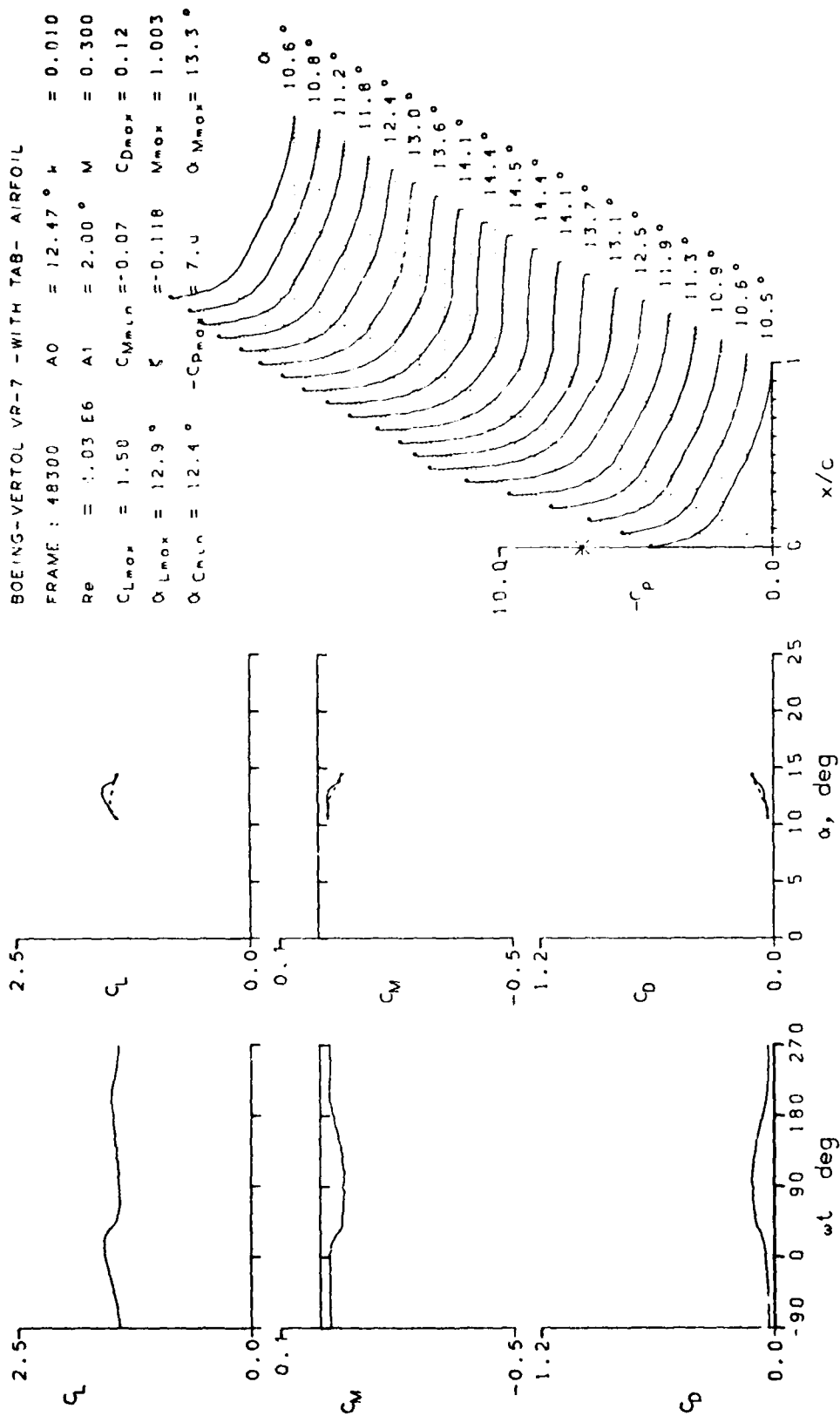


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB - AIRFOIL

FRAME : 48301 $A_0 = 12.47^\circ$ $\mu = 0.025$

$R_0 = 4.01$ E_6 $A_1 = 2.00^\circ$ $M = 0.300$

$C_{Lmax} = 1.62$ $C_{Mmin} = -0.07$ $C_{Dmax} = 0.12$

$\alpha_{Lmax} = 13.3^\circ$ $\xi = -0.155$ $M_{max} = 1.055$

$\alpha_{Cmin} = 12.4^\circ$ $-C_{Dmax} = 7.5$ $\alpha_{Mmax} = 13.8^\circ$

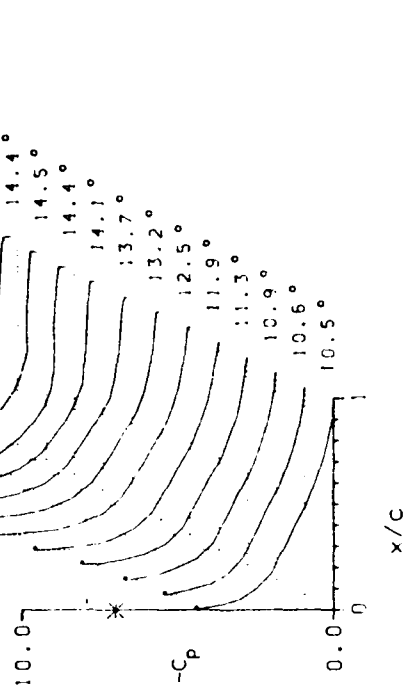
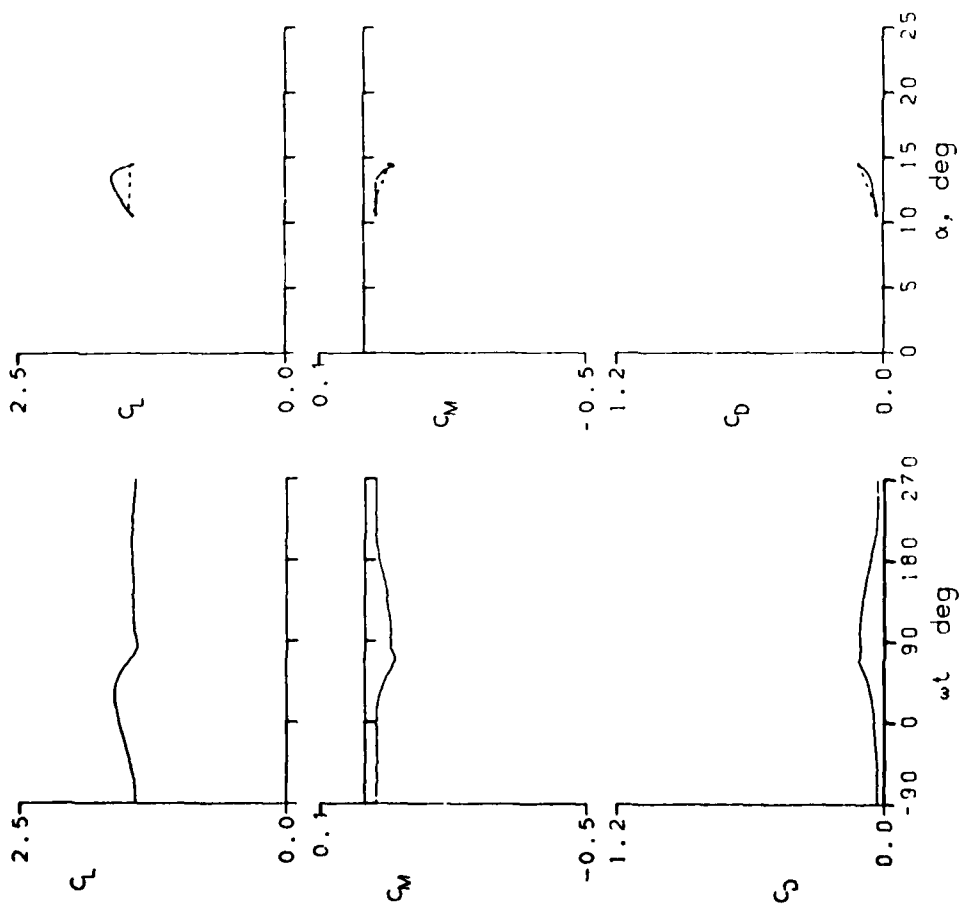


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 48302 $A_0 = 12.48^\circ$ $k = 0.050$
 $Re = 4.01 \times 10^6$ $A_1 = 2.00^\circ$ $M = 0.301$
 $C_{L_{max}} = 1.66$ $C_{M_{min}} = -0.08$ $C_{D_{max}} = 0.12$
 $\alpha_{L_{max}} = 13.8^\circ$ $\zeta = -0.153$ $M_{max} = 1.119$
 $\alpha_{C_{min}} = 12.4^\circ$ $-C_{p_{max}} = 8.1$ $\alpha_{M_{max}} = 14.2^\circ$

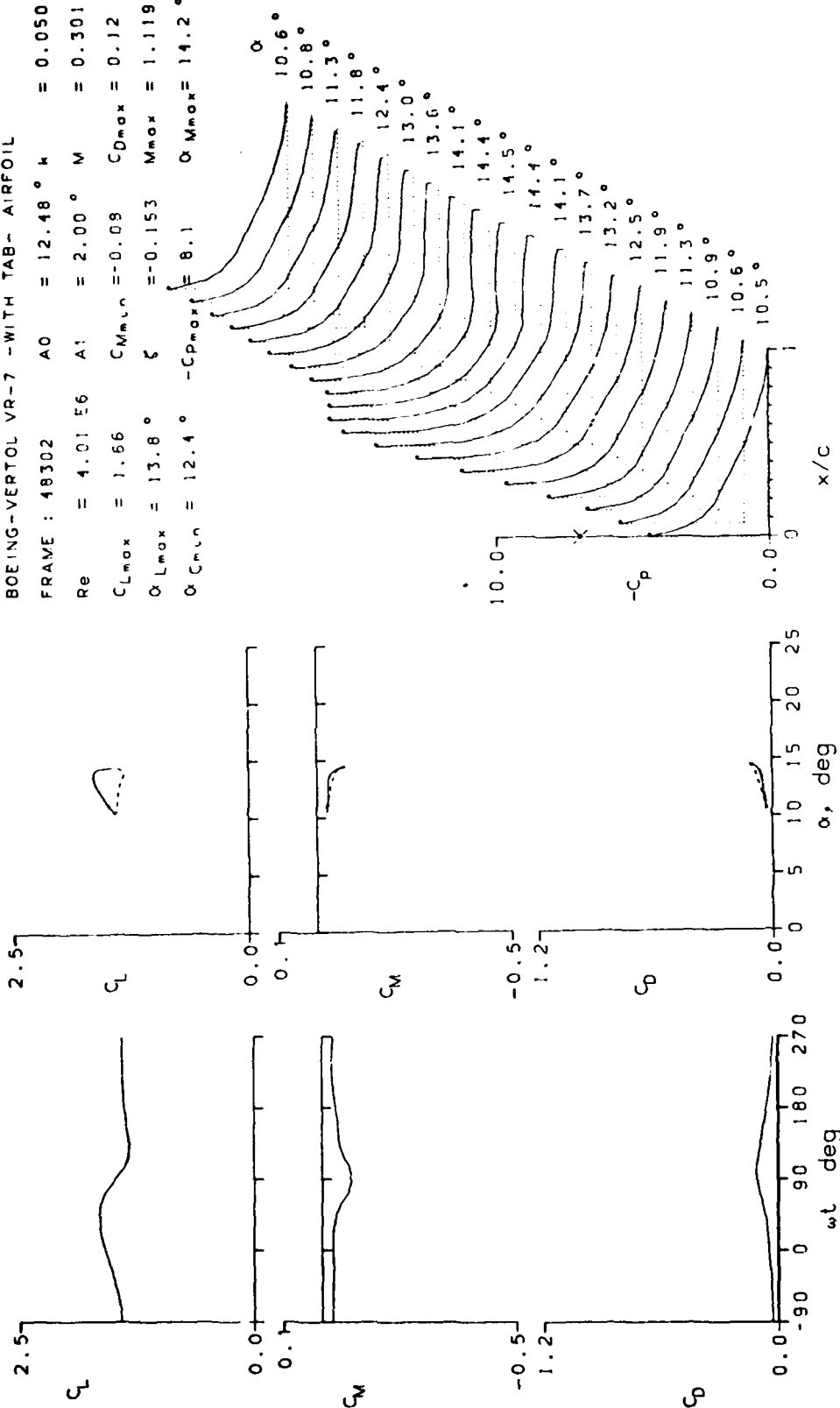


Figure 17.- Continued.

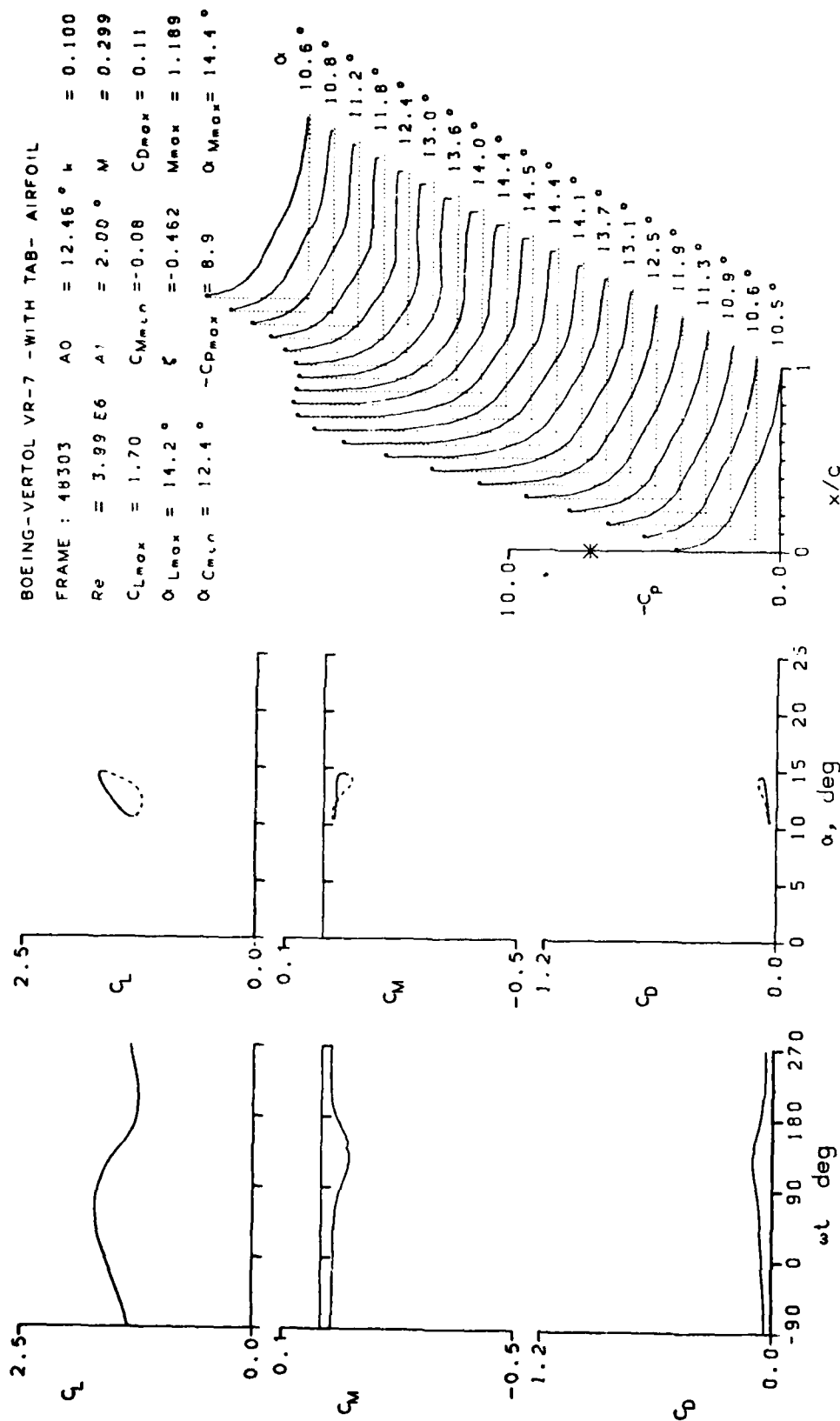


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48304 $A_0 = 12.47^\circ$ $k = 0.151$
 $Re = 3.98 \text{ E}6$ $A_1 = 2.00^\circ$ $M = 0.299$
 $C_{Lmax} = 1.73$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 14.4^\circ$ $\xi = -0.217$ $M_{max} = 1.231$
 $\alpha_{Cmin} = 12.4^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 14.5^\circ$

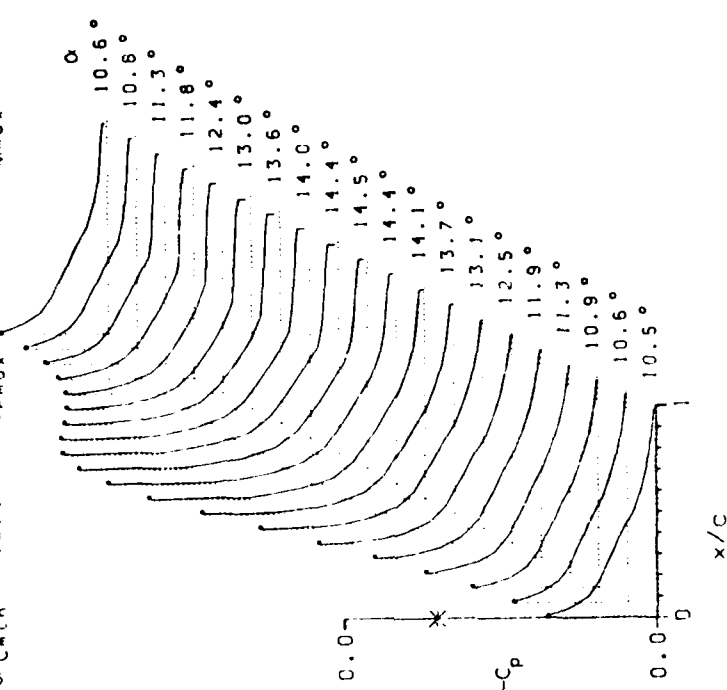
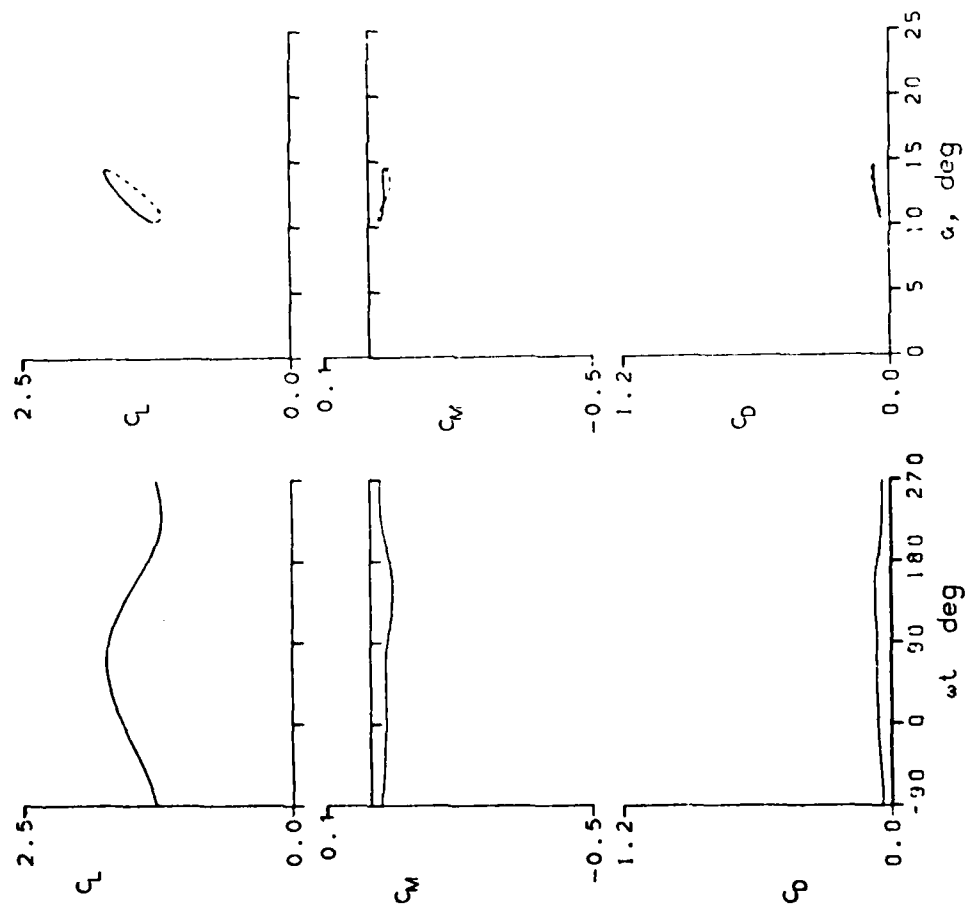


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 48308 $A_0 = 12.48^\circ$ $k = 0.201$
 $Re = 4.00 \text{ E}6$ $A_1 = 2.00^\circ$ $M = 0.300$
 $C_{Lmax} = 1.76$ $C_{Mmin} = -0.05$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 14.4^\circ$ $\zeta = 0.074$ $M_{max} = 1.265$
 $\alpha_{Cmin} = 12.4^\circ$ $-C_{Dmax} = 9.5$ $\alpha_{Mmax} = 14.5^\circ$

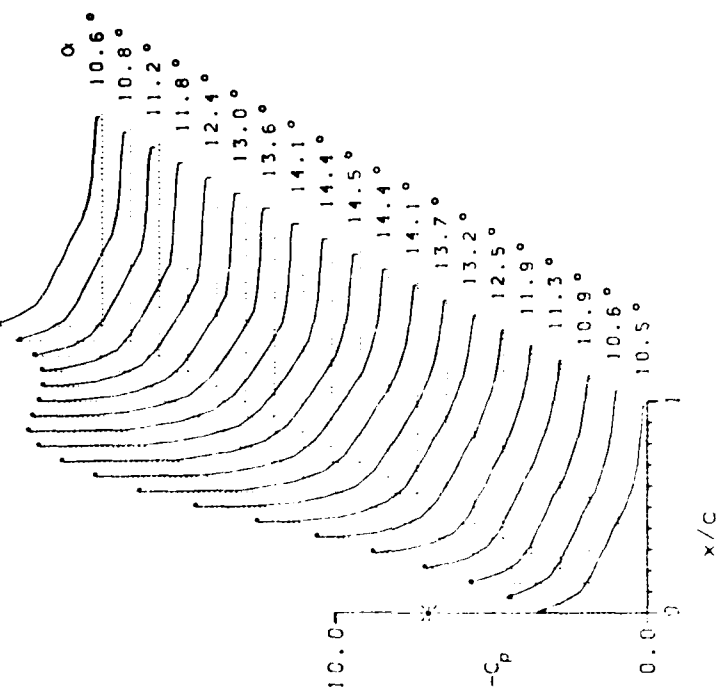
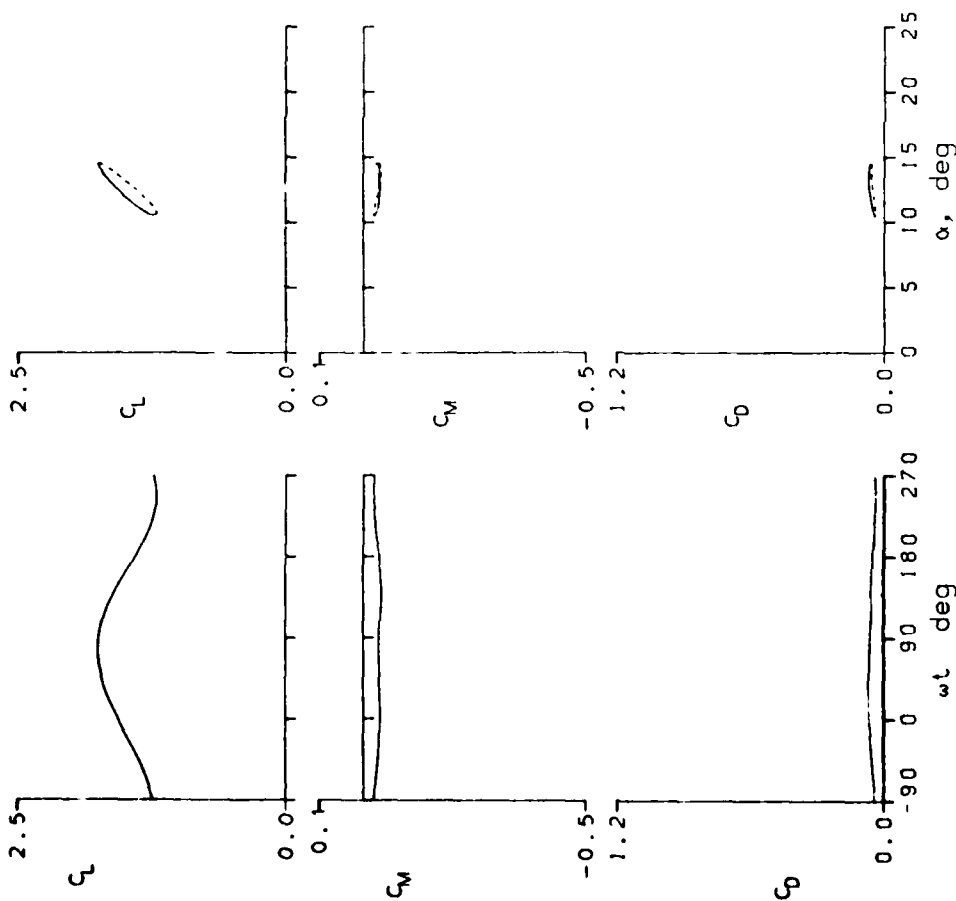


Figure 17.- Continued.

BOEING-VERVOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 49023 A0 = 14.77° k = 0.010
 Re = 2.54 E6 A1 = 9.90° M = 0.184
 CLmax = 1.58 CMmin = -0.12 CDmax = 0.36
 αLmax = 13.9° ζ = 0.084 Vmax = 0.609
 αCMmin = 14.2° -CDmax = 8.6 αMmax = 14.9°

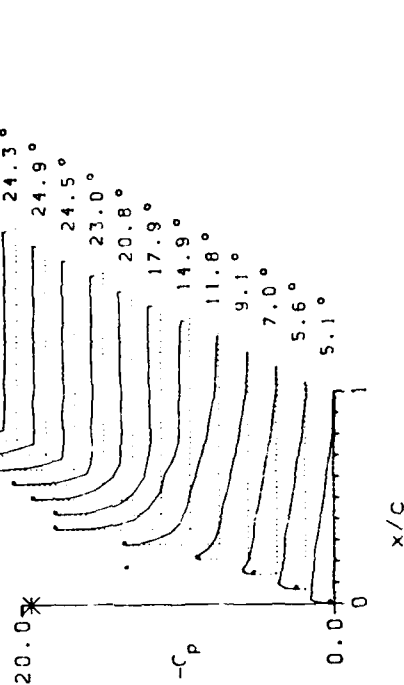
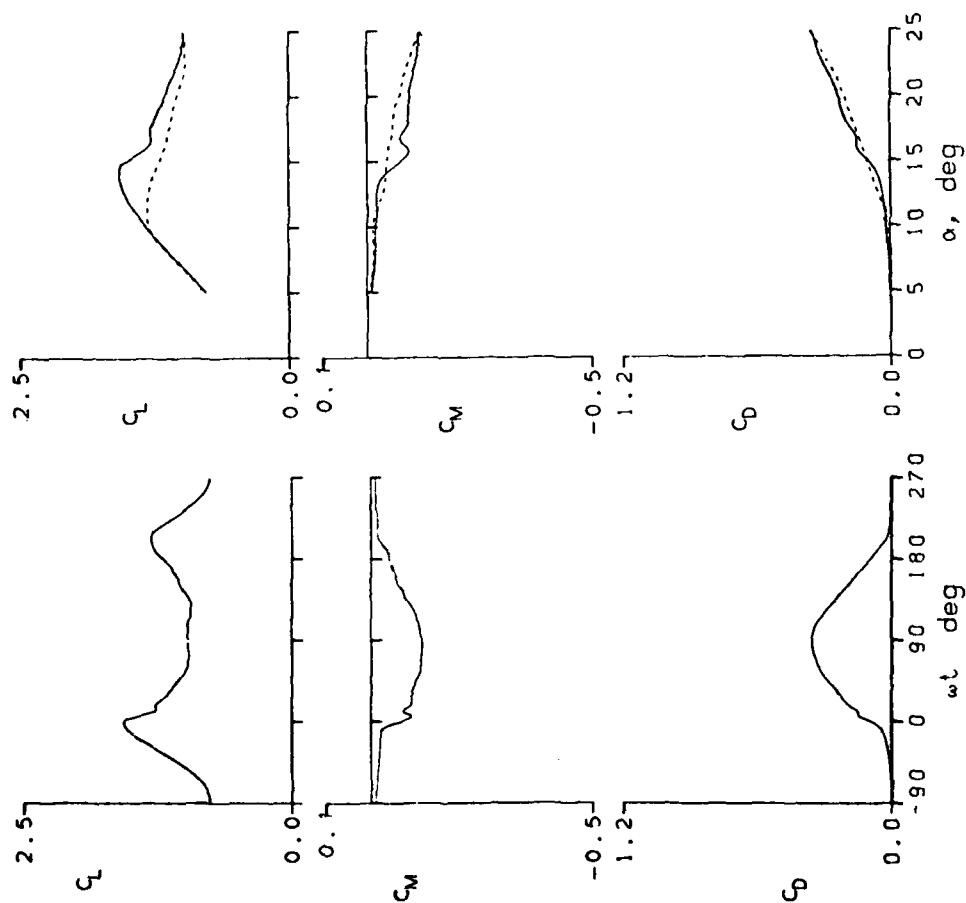


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 49110	A0 = 14.77 °	k = 0.026
Re = 2.63 E6	A1 = 9.90 °	M = 0.184
C _{Lmax} = 1.76	C _{Mmin} = -0.22	C _{Dmax} = 0.38
α _{Lmax} = 16.1 °	ξ = 0.270	M _{max} = 0.681

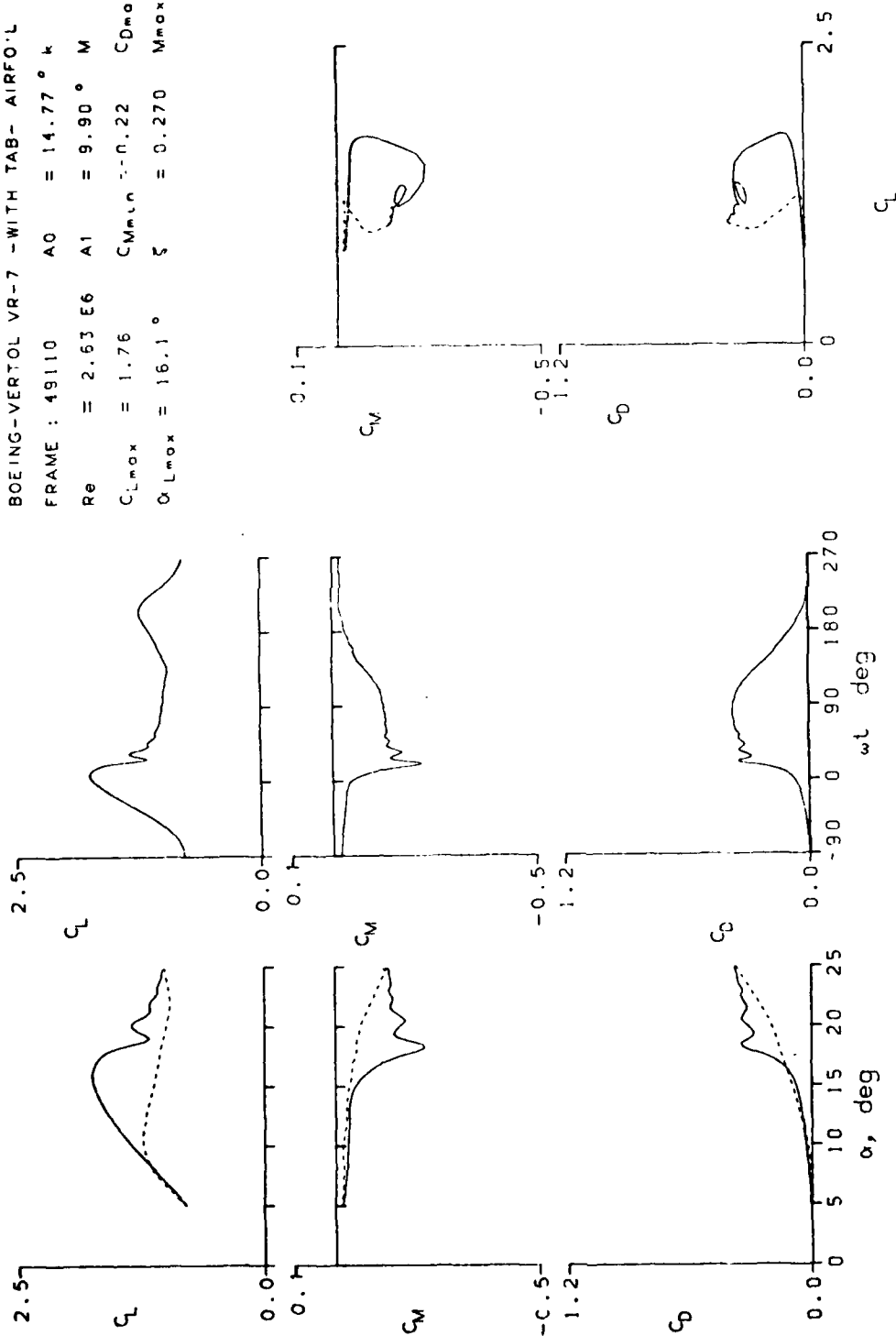


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 49117 A0 = 14.78° h = 0.051
 Re = 2.62 E6 A1 = 9.90° M = 0.185
 C_{Lmax} = 1.95 C_{Mmin} = -0.33 C_{Dmax} = 0.68
 α_{Lmax} = 17.9° ξ = 0.387 M_{max} = 0.792

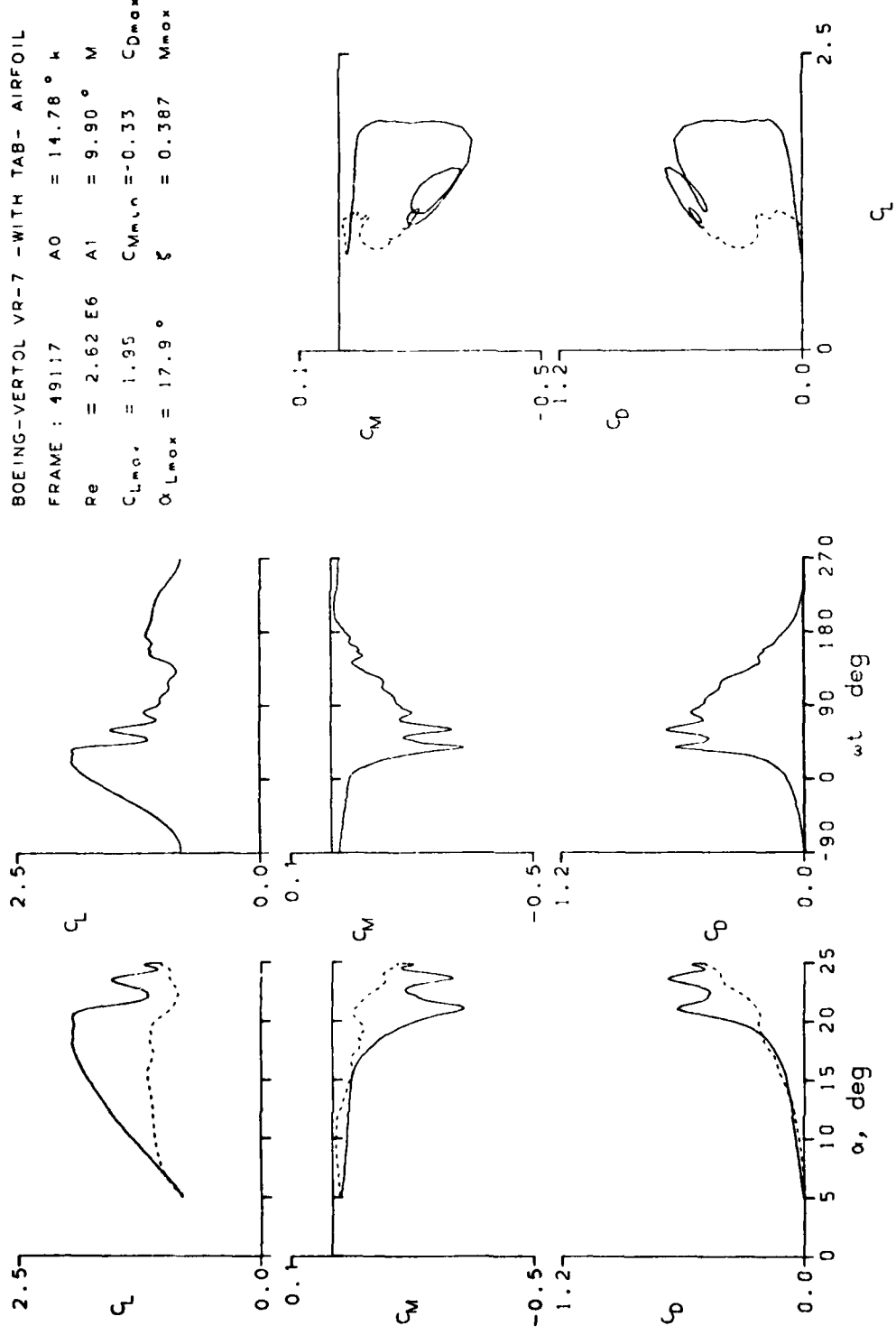


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 49120 $A_0 = 14.78^\circ$ $\mu = 0.101$
 $Re = 2.60 \times 10^6$ $A_1 = 9.90^\circ$ $M = 0.185$
 $C_{Lmax} = 2.34$ $C_{Mmin} = -0.42$ $C_{Dmax} = 0.97$
 $\alpha_{Lmax} = 23.0^\circ$ $\xi = 0.338$ $M_{max} = 0.959$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Pmax} = 18.1$ $\alpha_{Mmax} = 21.6^\circ$

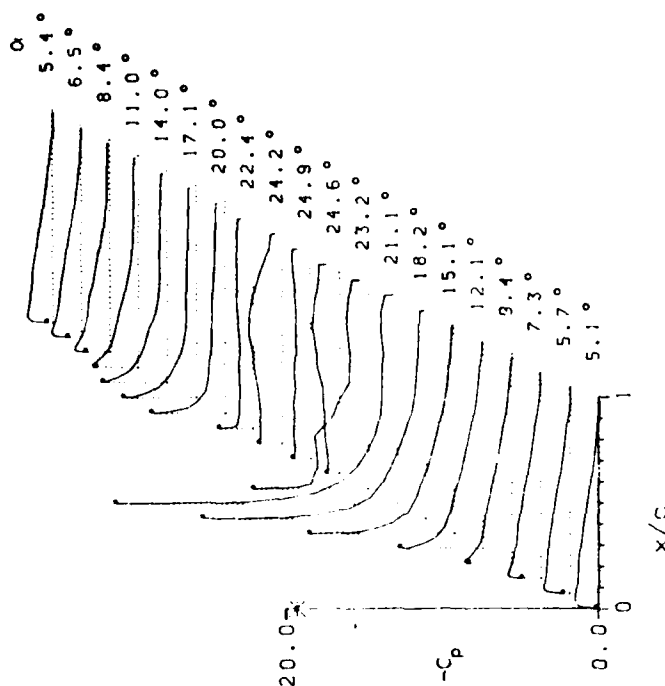
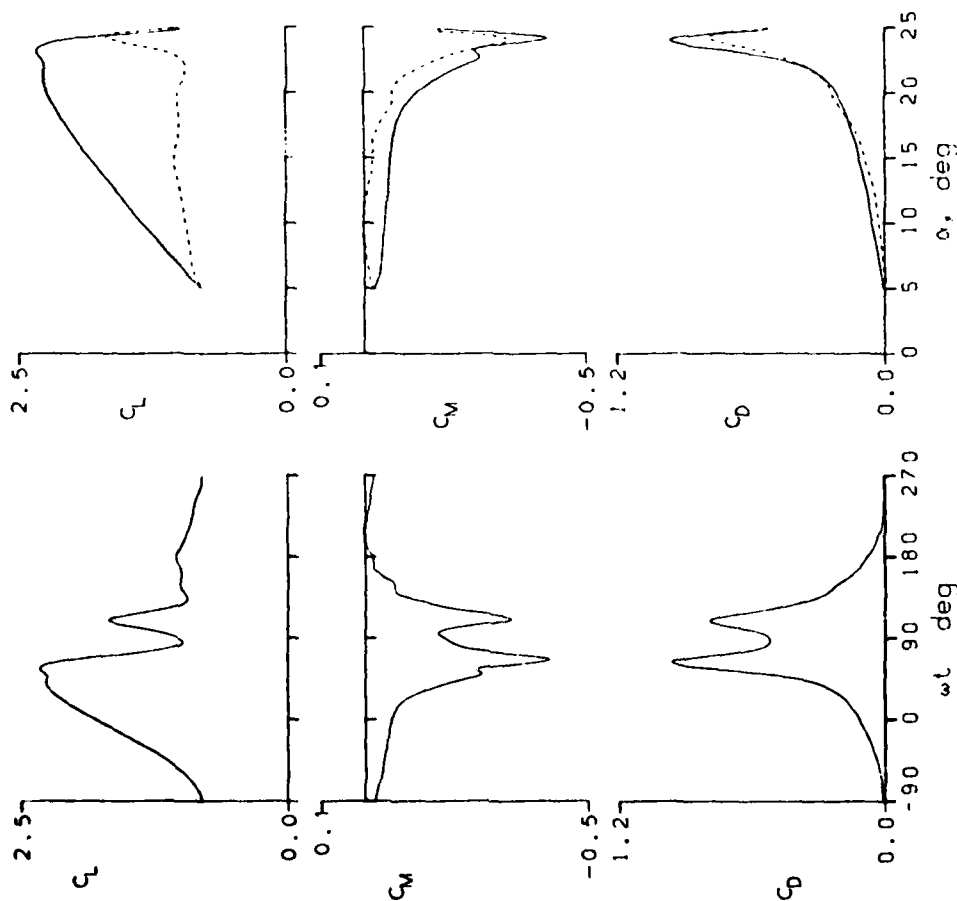


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 49203 $A_0 = 14.77^\circ$ $h = 0.152$
 $Re = 2.59 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.185$
 $C_{Lmax} = 2.68$ $C_{Mmin} = -0.46$ $C_{Dmax} = 1.10$
 $\alpha_{Lmax} = 24.1^\circ$ $\xi = 0.215$ $M_{max} = 1.066$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{pmax} = 20.9$ $\alpha_{Mmax} = 23.2^\circ$

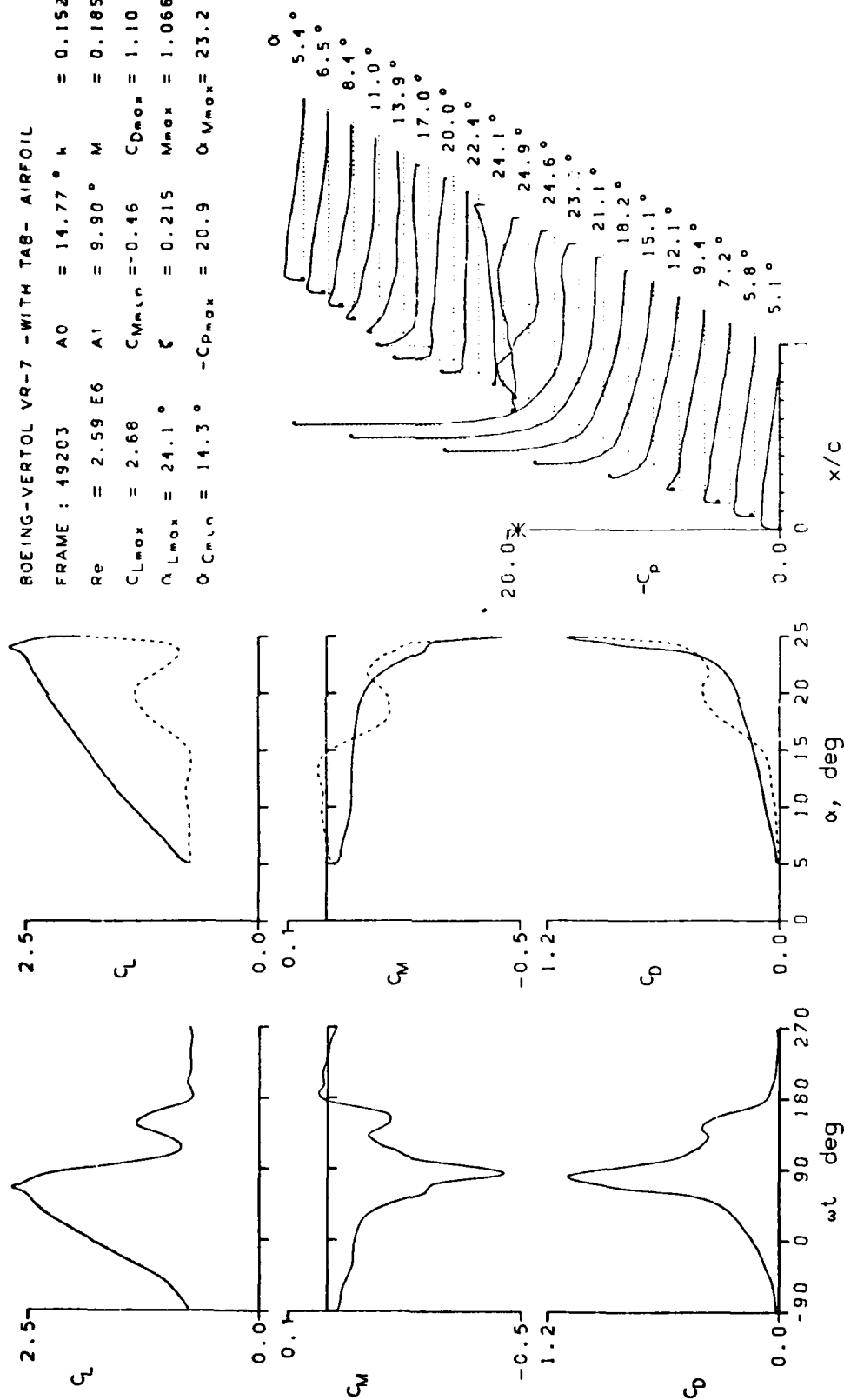


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 4920E	A0 = 14.77°	k = 0.202
Re = 2.58 E6	A1 = 9.90°	M = 0.185
CLmax = 2.90	CMmin = -0.44	CDmax = 1.10
αLmax = 24.3°	ξ = 0.294	Mmax = 1.130
αCMmin = 14.4°	-CDmax = 22.5	αMmax = 23.8°

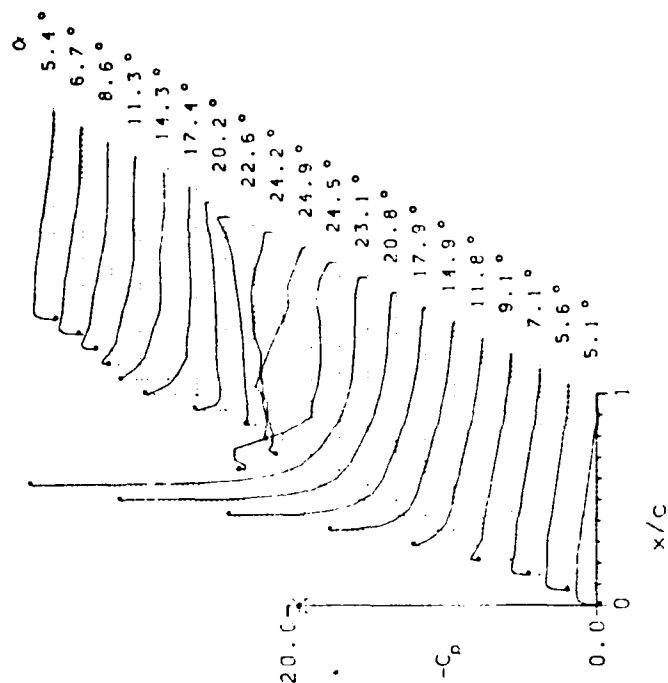
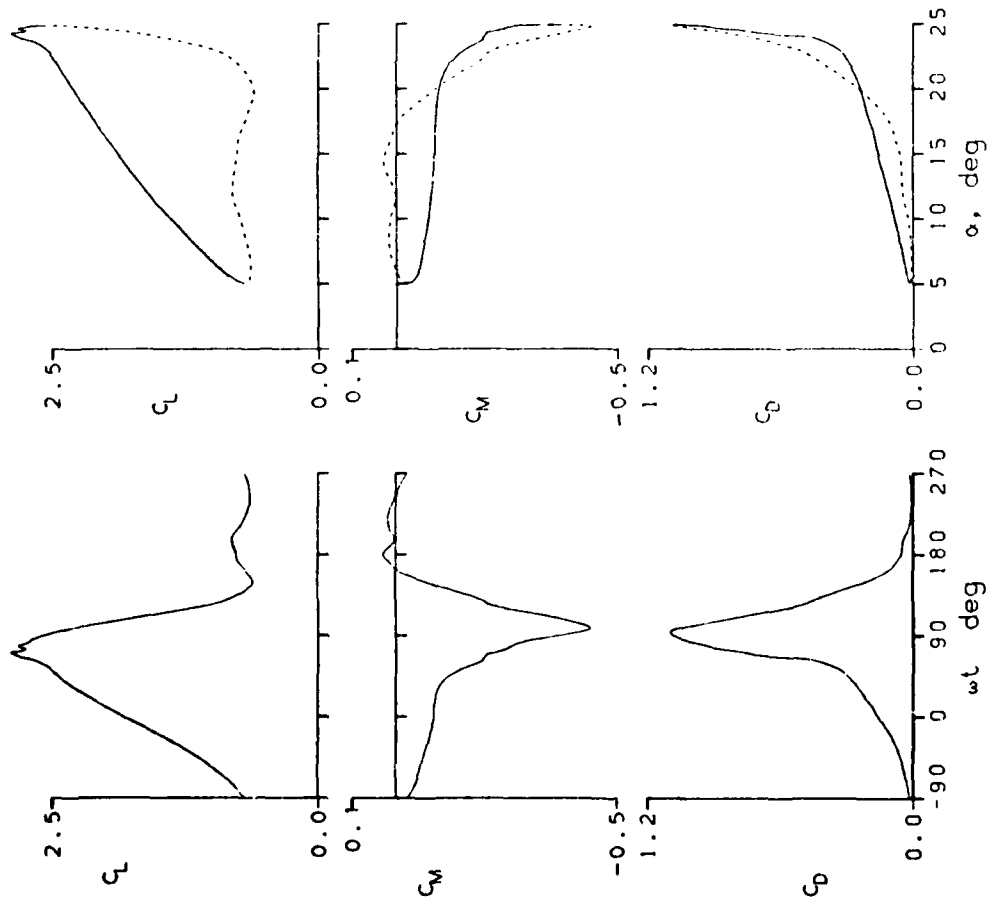


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB - AIRFOIL

FRAMF : 49216	A0 = 4.55°	k = 0.025
Re = 2.56 E6	A1 = 10.95°	M = 0.184
CLmax = 1.62	CMmin = -0.09	CDmax = 0.11
αLmax = 13.9°	ξ = 0.058	Mmax = 0.600
αCmin = 4.1°	-CDmax = 8.3	αMmax = 14.3°

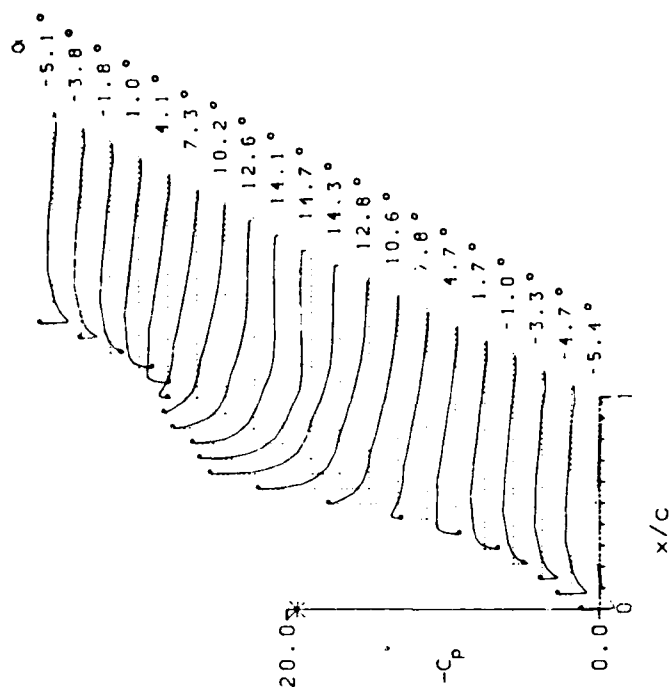
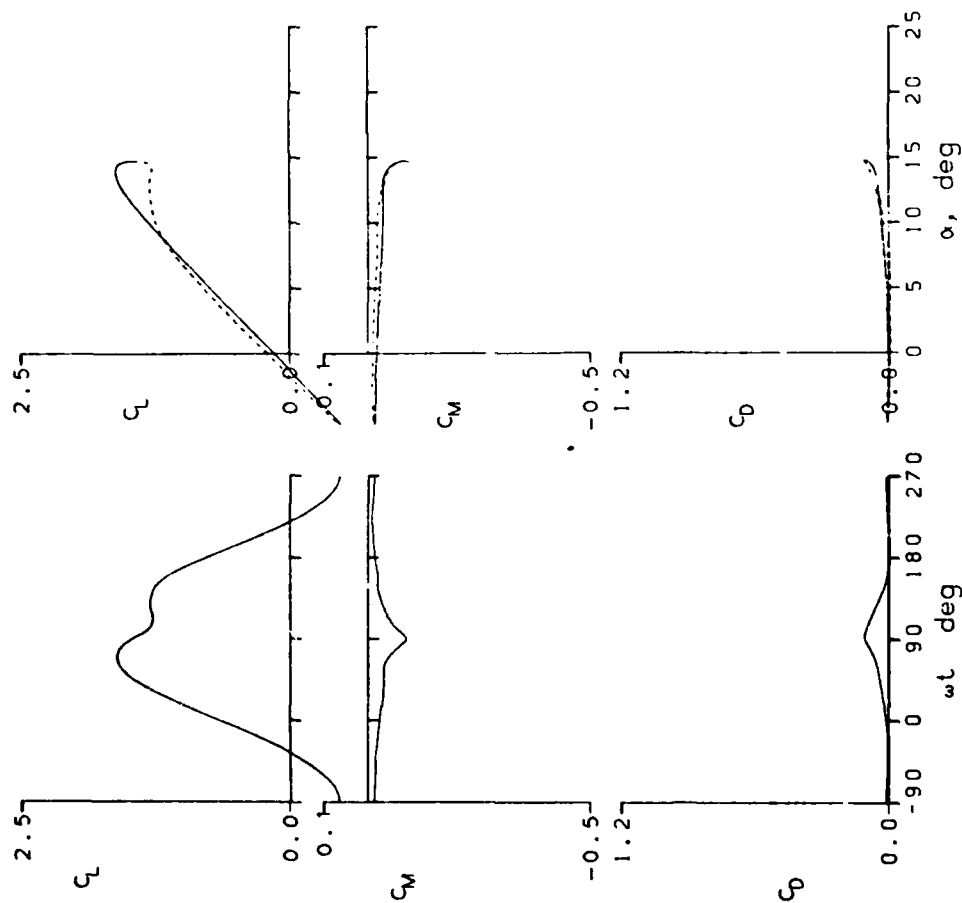


Figure 17.- Continued.

BCEING-VERTOL VP-7 -WITH TAB- AIRFOIL

FRAME : 49300 $A_0 = 4.54^\circ$ $k = 0.101$
 $Re = 2.54 \text{ E6}$ $A_1 = 10.05^\circ$ $M = 0.104$
 $C_{Lmax} = 1.72$ $C_{Mmin} = -0.05$ $C_{Dmax} = 0.09$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.260$ $M_{max} = 0.638$
 $\alpha_{Cmin} = 4.1^\circ$ $-C_{Pmax} = 9.3$ $\alpha_{Mmax} = 14.7^\circ$

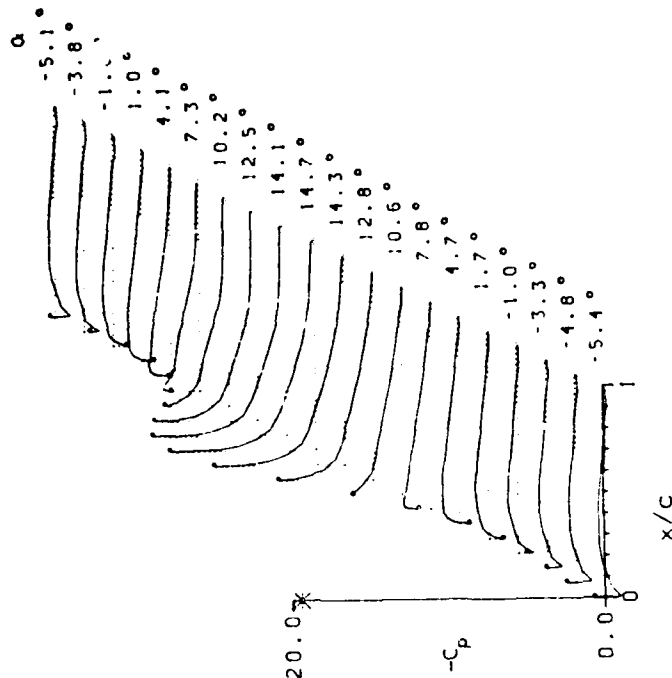
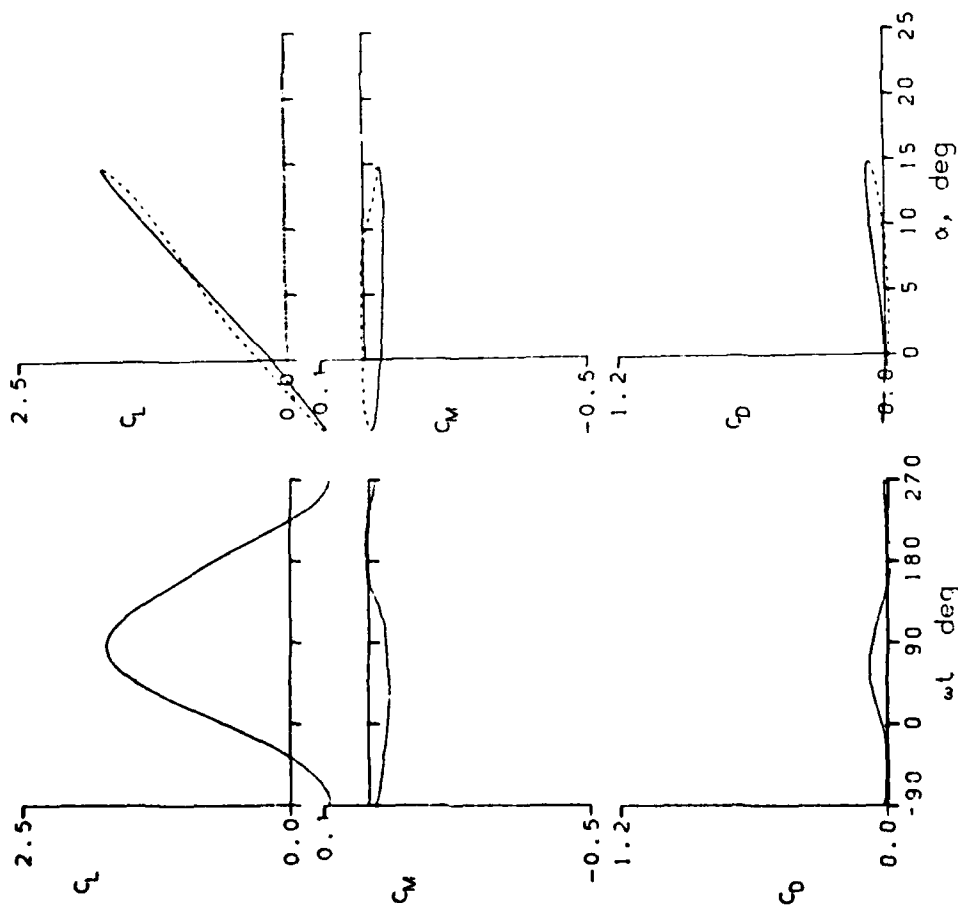


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 49307 $A_0 = 4.53^\circ$ $k = 0.201$
 $Re = 2.55 \text{ E}6$ $A_1 = 10.05^\circ$ $M = 0.185$
 $C_{Lmax} = 1.71$ $C_{Mmin} = -0.07$ $C_{Dmax} = 0.11$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.578$ $M_{max} = 0.640$
 $\alpha_{Cmin} = 4.1^\circ$ $-C_{Pmax} = 9.3$ $\alpha_{Mmax} = 14.6^\circ$

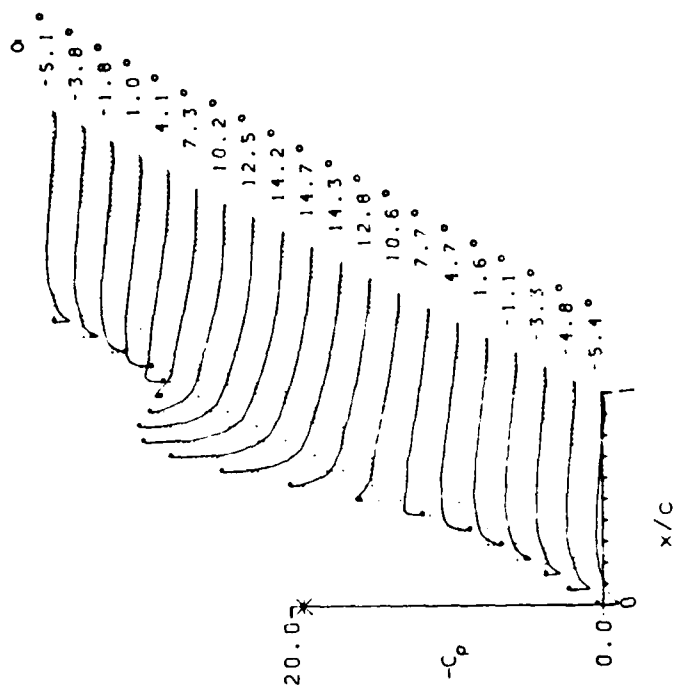
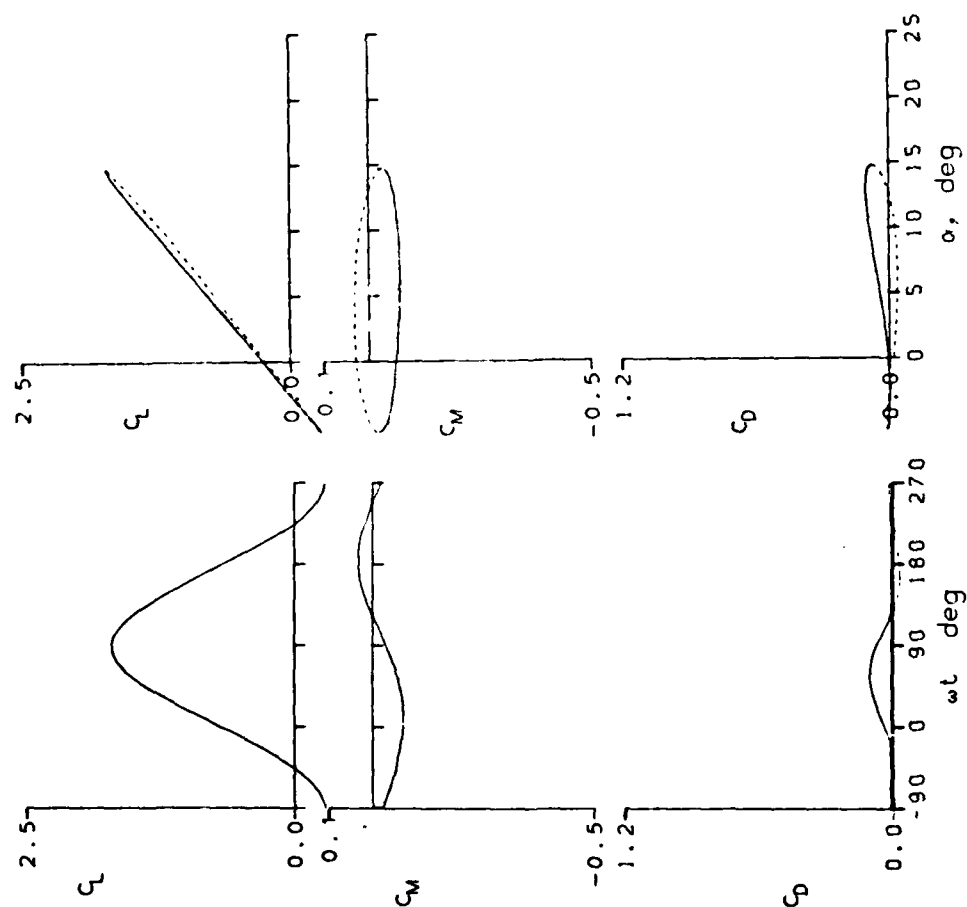


Figure 17.- Continued.

BOEING-VERVOL VR-7 - WITH TAB- AIRFOIL
 FRAME : 4931C $A_0 = 4.54^\circ$ $k = 0.250$
 $Re = 2.54 \text{ E}6$ $A' = 10.05^\circ M$ $= 0.185$
 $C_{Lmax} = 1.72$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.12$
 $\alpha_{Lmax} = 14.7^\circ$ $\zeta = 0.754$ $M_{max} = 0.643$
 $\alpha_{Cmin} = 4.3^\circ$ $-C_{Dmax} = 9.4$ $\alpha_{Mmax} = 14.3^\circ$

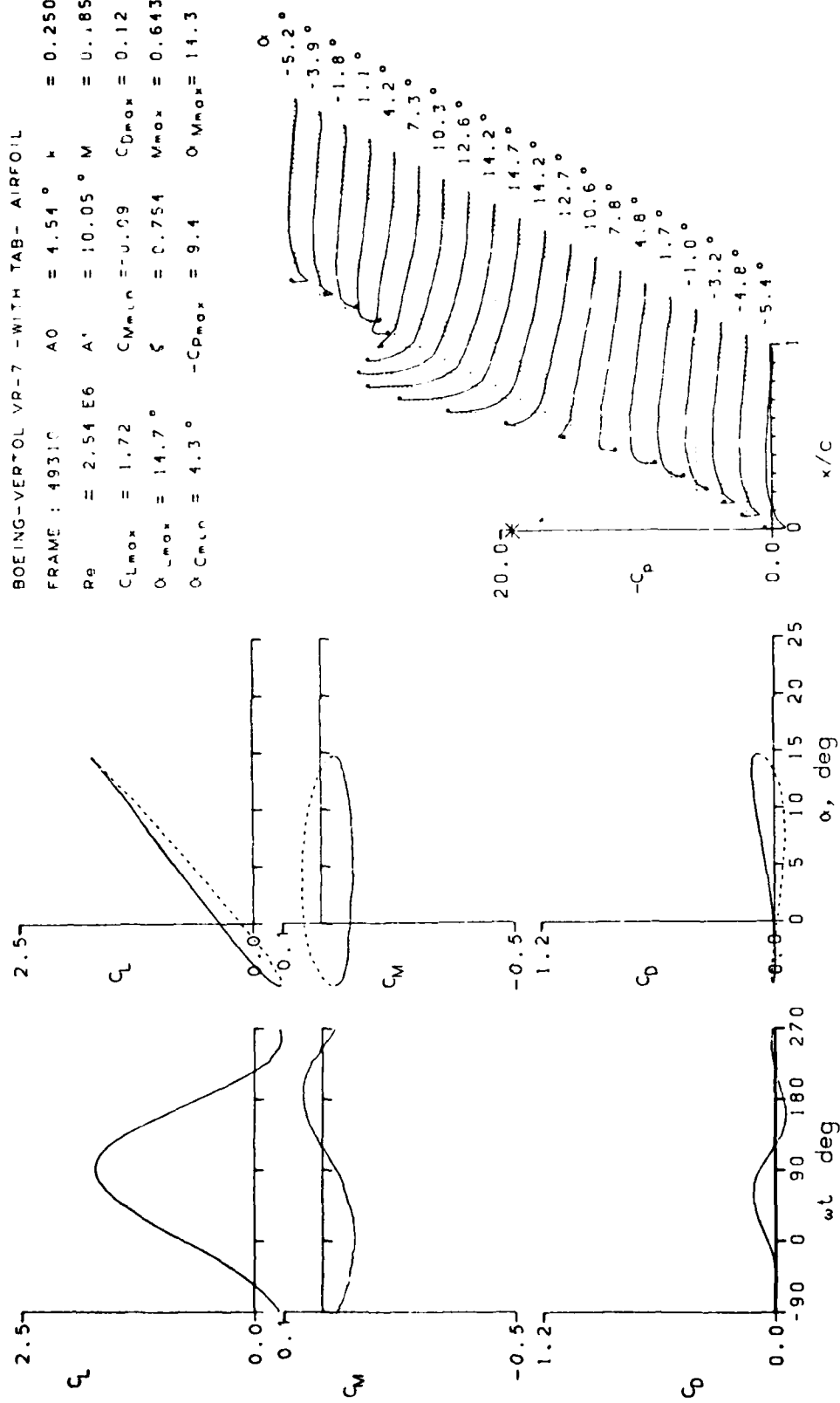


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 50116	A0 = 4.55°	k = 0.010
Re = 2.53 E6	A1 = 10.05°	M = 0.183
C _{Lmax} = 1.56	C _{Mmin} = -0.07	C _{Dmax} = 0.11
α _{Lmax} = 13.4°	ξ = 0.023	M _{max} = 0.560
α _{Cmin} = 4.1°	-C _{Dmax} = 7.4	α _{Mmax} = 13.7°

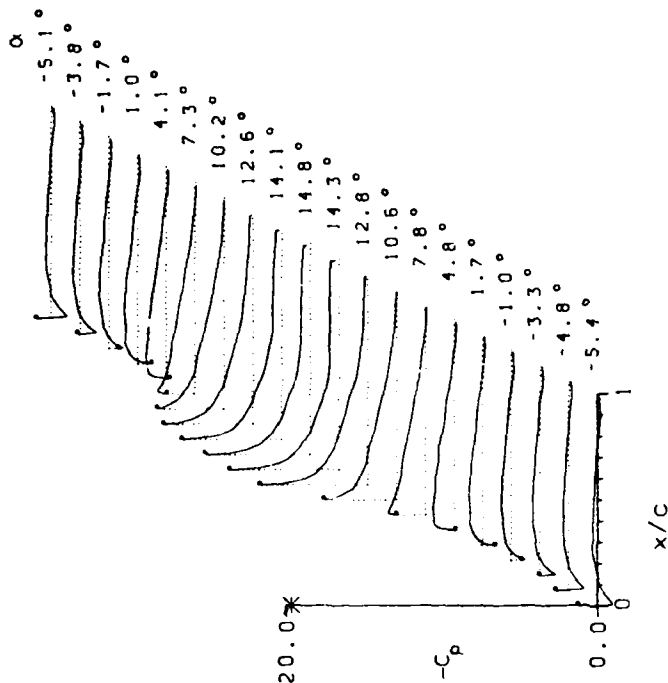
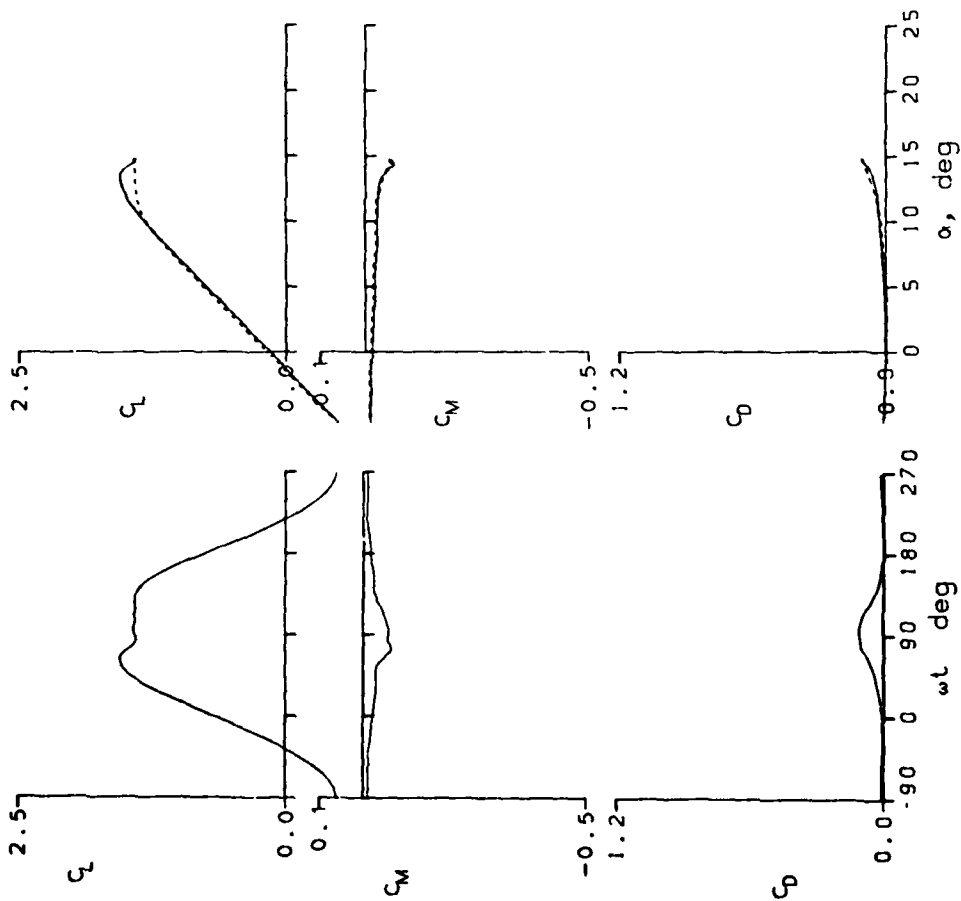


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 54019	A0 = 9.82°	k = 0.026
Re = 2.63 E6	A1 = 9.90°	M = 0.183
CLmax = 1.74	CMmin = -0.18	CDmax = 0.28
αLmax = 15.3°	ξ = 0.146	Mmax = 0.669
αCMmin = 9.3°	-CPmax = 10.3	αMmax = 16.1°

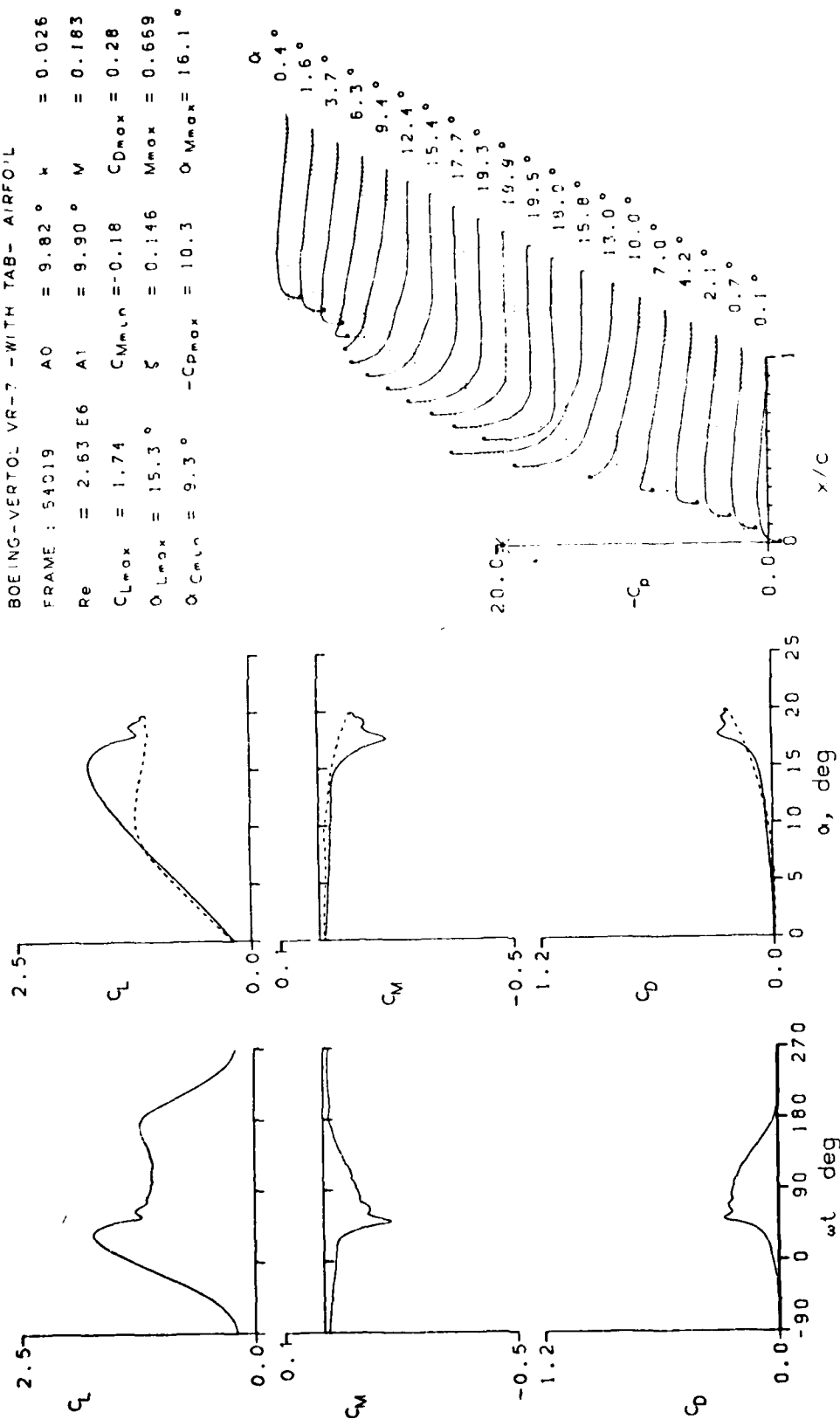


Figure 17.- Continued.

BOEING VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 54022 A0 = 9.83° k = 0.051
 Re = 2.62 E6 A1 = 9.90° M = 0.183
 C_{Lmax} = 1.90 C_{Mmin} = -0.28 C_{Dmax} = 0.48
 α_{Lmax} = 17.1° ζ = 0.244 M_{max} = 0.754
 α_{Cmin} = 9.3° -C_{Dmax} = 12.7 α_{Mmax} = 17.9°

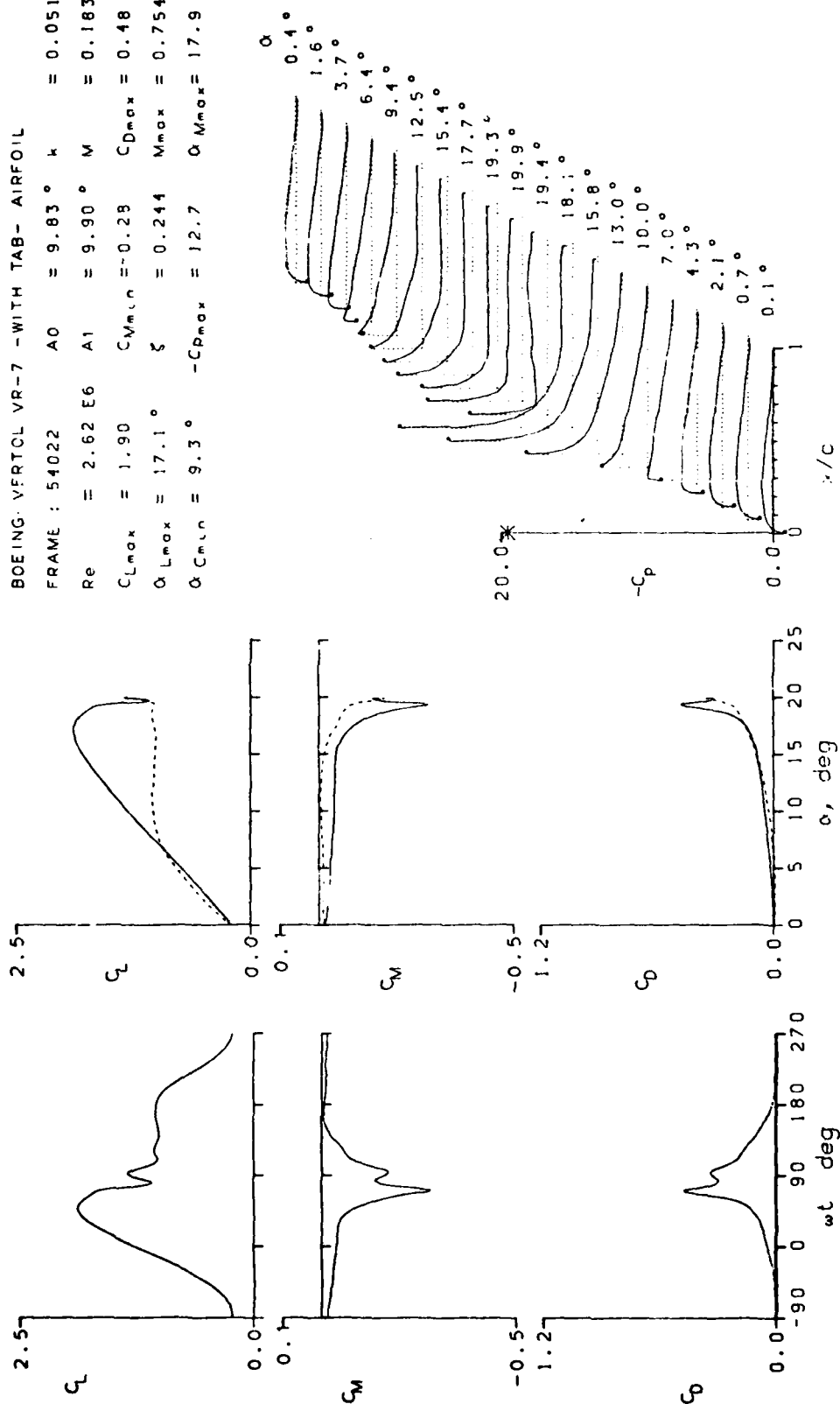


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 54101 $A_0 = 9.83^\circ$ $k = 0.102$

$Re = 2.5 \times 10^6$ $A_1 = 9.90^\circ$ $M = 0.183$

$C_{Lmax} = 2.11$ $C_{Mmin} = -0.29$ $C_{Dmax} = 0.54$

$\alpha_{Lmax} = 19.0^\circ$ $\xi = 0.154$ $M_{max} = 0.867$

$\alpha_{Cmin} = 9.4^\circ$ $-C_{Dmax} = 15.9$ $\alpha_{Mmax} = 19.4^\circ$

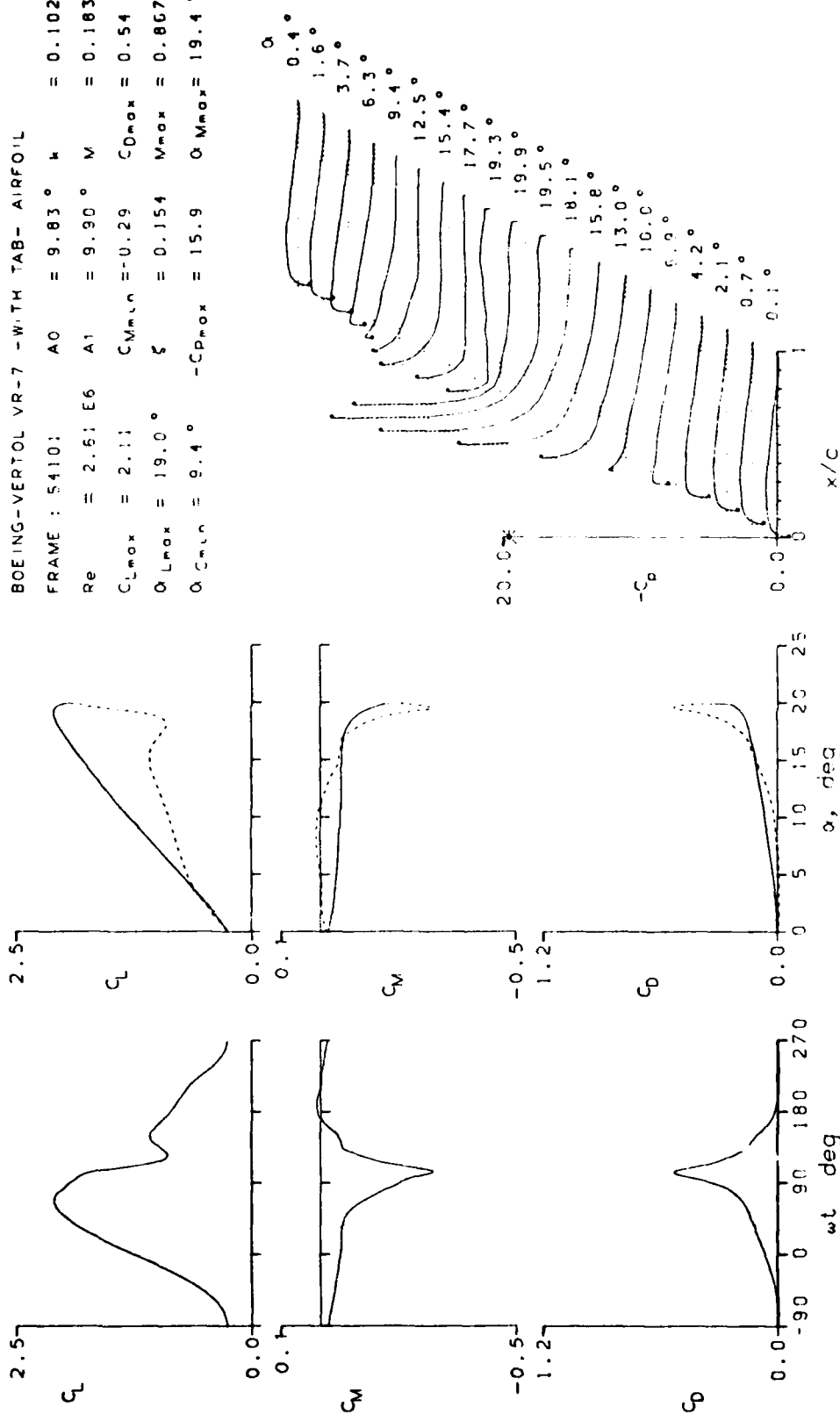


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 54110	$A_0 = 9.82^\circ$	$k = 0.153$
$Re = 2.60 \times 10^6$	$A_1 = 9.91^\circ$	$M = 0.184$
$C_{Lmax} = 2.19$	$C_{Mmin} = -0.24$	$C_{Dmax} = 0.39$
$\alpha_{Lmax} = 19.7^\circ$	$\xi = 0.092$	$M_{max} = 0.923$
$\alpha_{Cmin} = 9.3^\circ$	$-C_{Pmax} = 17.4$	$\alpha_{Mmax} = 19.9^\circ$

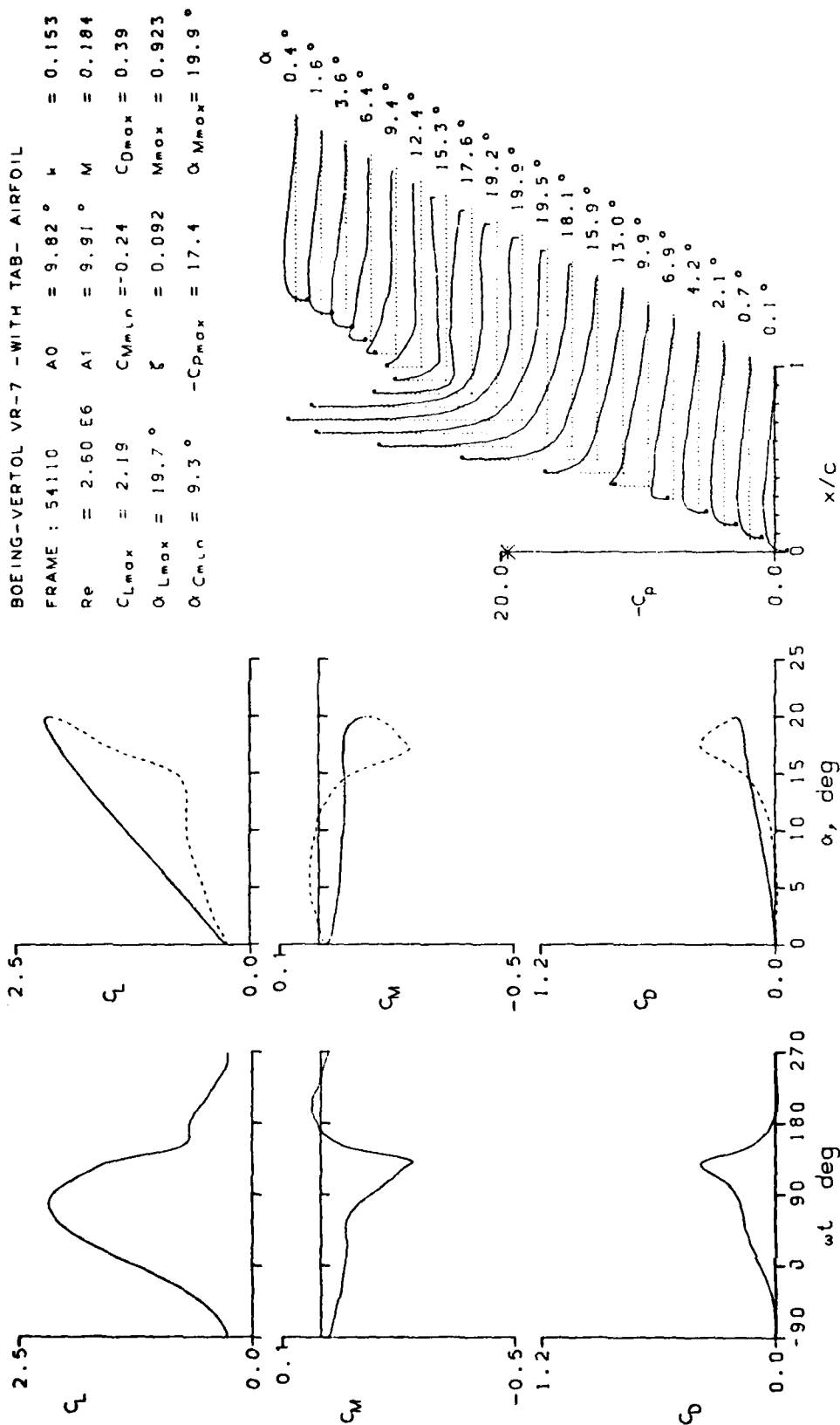


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 54113 $A_0 = 9.81^\circ$ $k = 0.203$
 $Re = 2.59 \text{ E}6$ $A_1 = 9.91^\circ$ $M = 0.184$
 $C_{L_{max}} = 2.24$ $C_{M_{min}} = -3.16$ $C_{D_{max}} = 0.20$
 $\alpha_{L_{max}} = 19.8^\circ$ $\xi = 0.177$ $M_{max} = 0.950$
 $\alpha_{C_{min}} = 9.3^\circ$ $-C_{D_{max}} = 18.1$ $\alpha_{M_{max}} = 19.9^\circ$

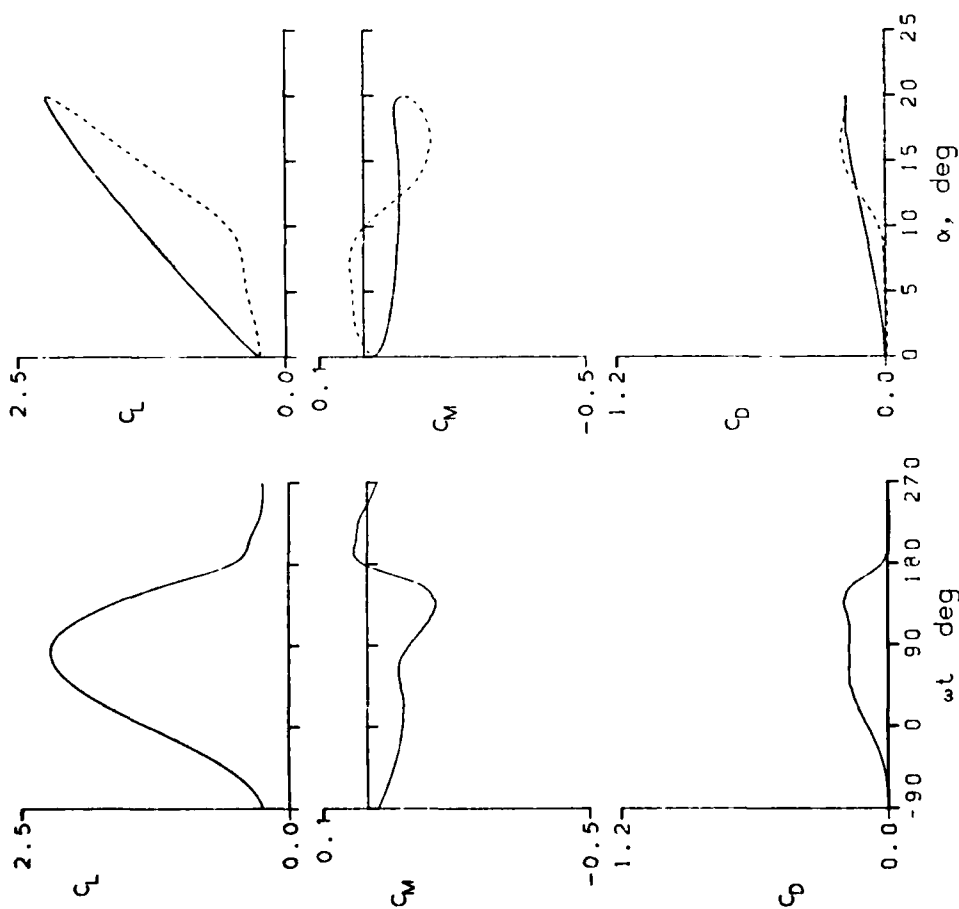


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 54116 A0 = 9.83° μ = 0.254
 Re = 2.58 E6 A1 = 9.90° M = 0.184
 C_{Lmax} = 2.27 C_{Mmin} = -0.11 C_{Dmax} = 0.20
 α_{Lmax} = 19.9° ξ = 0.348 M_{max} = 0.971
 α_{Cmin} = 9.4° $-C_{Dmax}$ = 18.7 α_{Mmax} = 19.8°

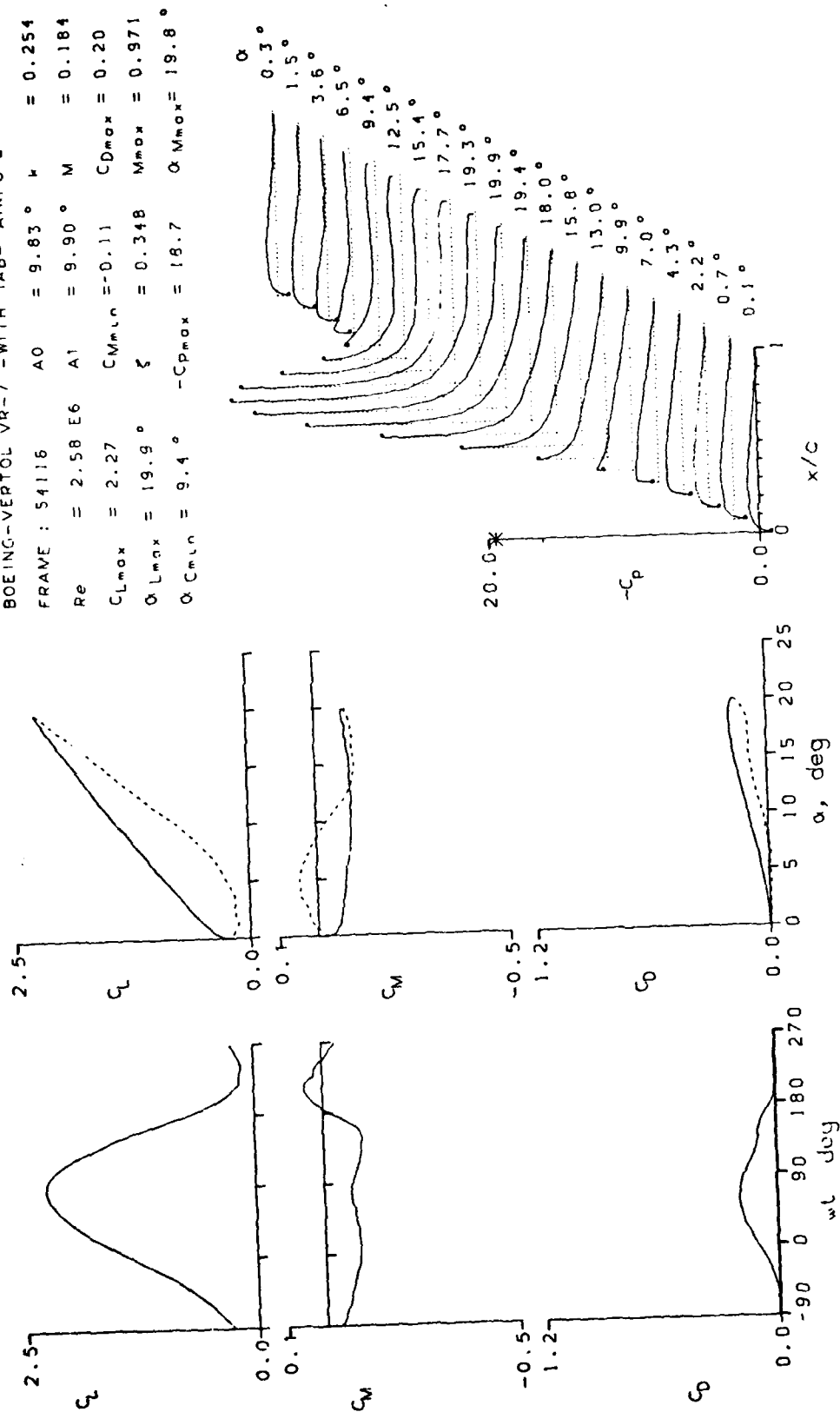


Figure 17.- Continued.

B7FING-VEPTOL VP-7 -WITH TAB- AIRFOIL
 FRAME : 54216 $A_0 = 14.78^\circ$ $\nu = 0.151$
 $R_0 = 2.55 E6$ $A_1 = 9.90^\circ$ $M = 0.184$
 $C_{Lmax} = 2.66$ $C_{Mmin} = -0.46$ $C_{Dmax} = 1.09$
 $\alpha_{Lmax} = 24.0^\circ$ $\zeta = 0.216$ $M_{max} = 1.048$
 $\alpha_{Cmin} = 14.2^\circ$ $-C_{Pmax} = 20.7$ $\alpha_{Mmax} = 23.1^\circ$

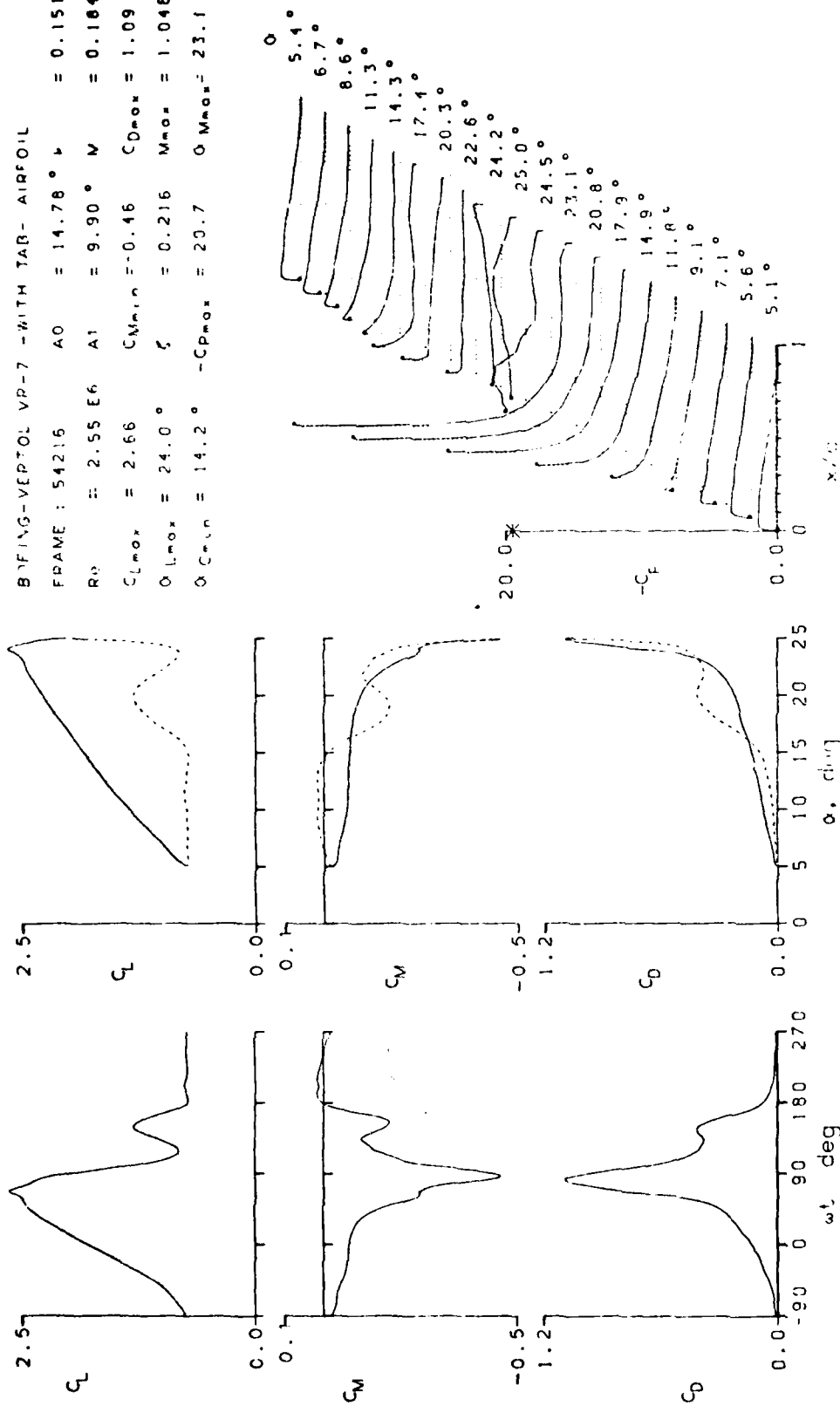


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 57018 $A_0 = 14.77^\circ$ $k = 0.152$
 $Re = 2.56 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.184$
 $C_{Lmax} = 2.67$ $C_{Mmin} = -0.46$ $C_{Dmax} = 1.06$
 $\alpha_{Lmax} = 24.0^\circ$ $\zeta = 0.226$ $M_{max} = 1.056$
 $\alpha_{Cmin} = 14.2^\circ$ $-C_{Dmax} = 20.9$ $\alpha_{Mmax} = 23.2^\circ$

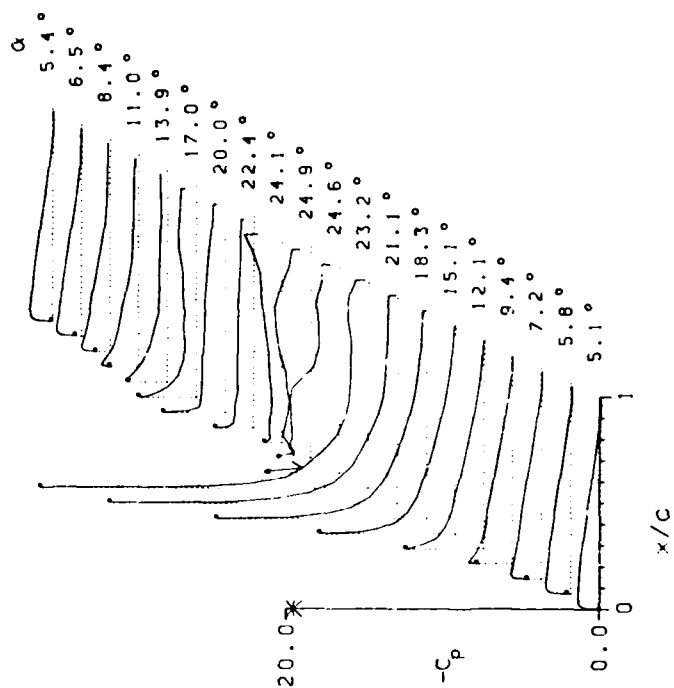
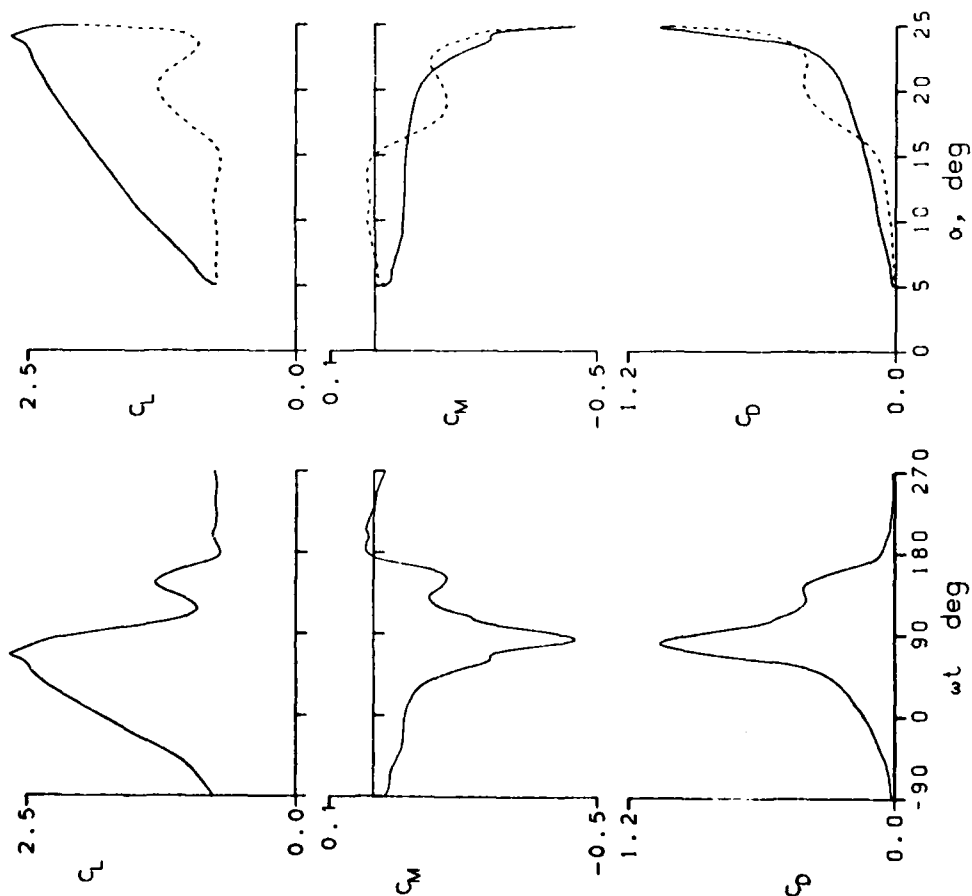


Figure 17.- Continued.

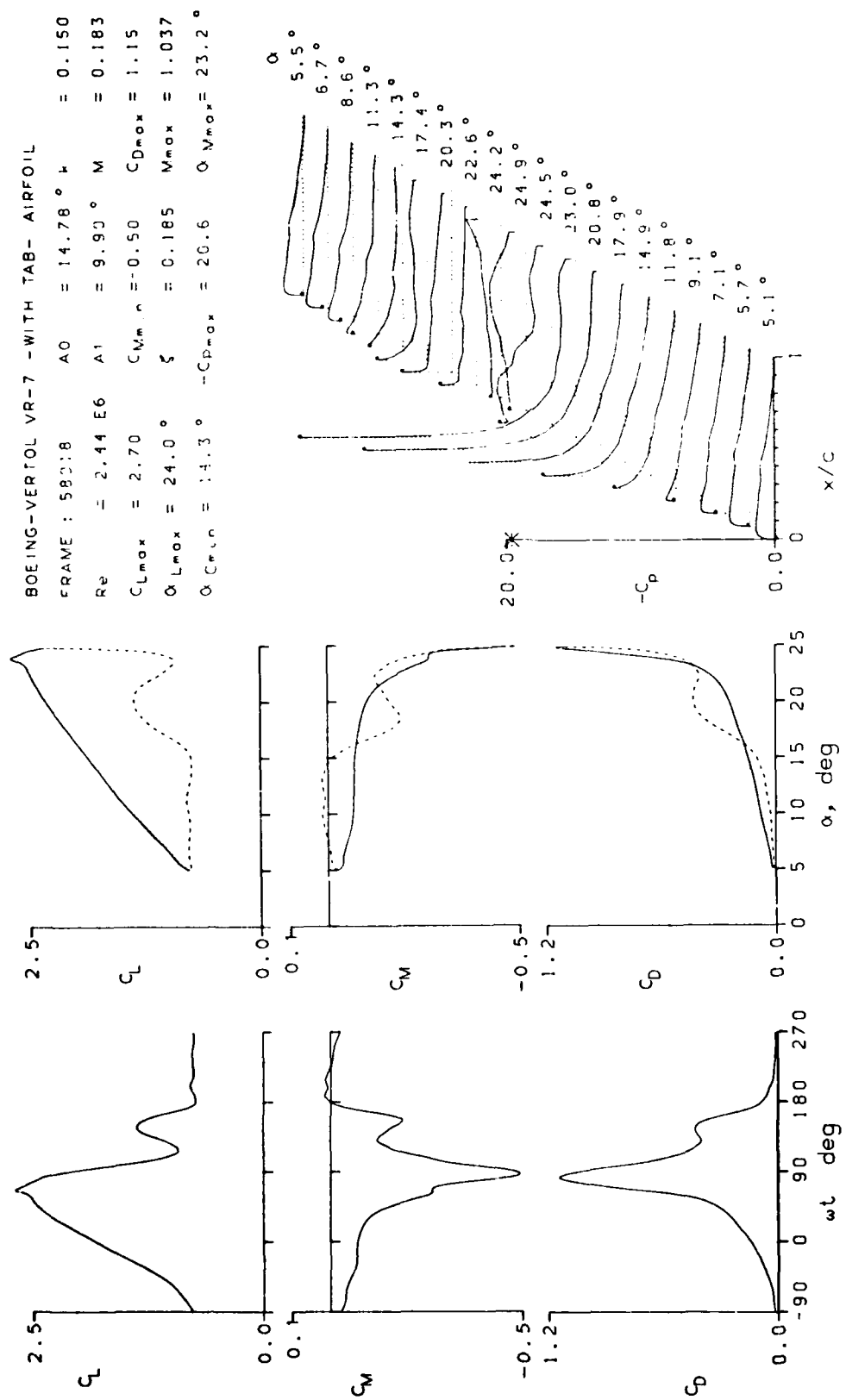


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 58102 $A_0 = 14.78^\circ$ $\mu = 0.098$
 $Re = 0.50 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.037$
 $C_{Lmax} = 2.37$ $C_{Mmin} = -0.41$ $C_{Dmax} = 0.98$
 $\alpha_{Lmax} = 20.8^\circ$ $\zeta = 0.529$ $M_{max} = 0.134$
 $\alpha_{Cmin} = 14.2^\circ$ $-C_{Dmax} = 12.2$ $\alpha_{Mmax} = 19.7^\circ$

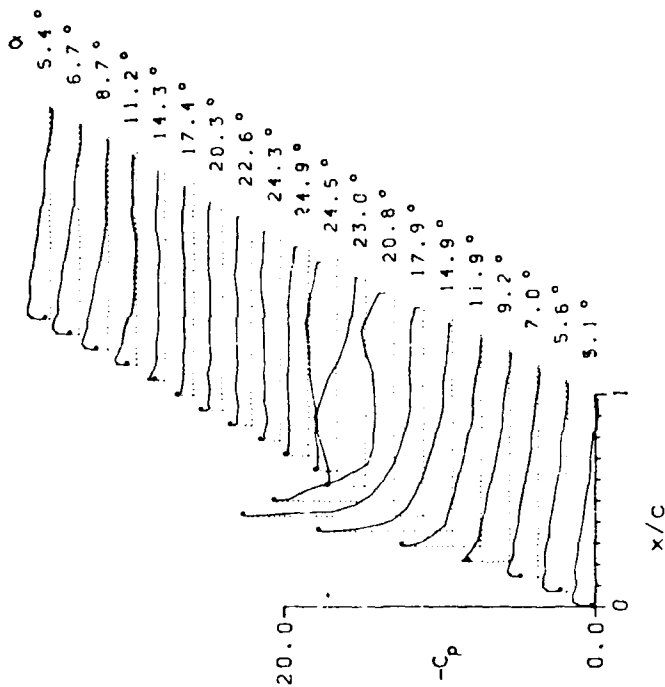
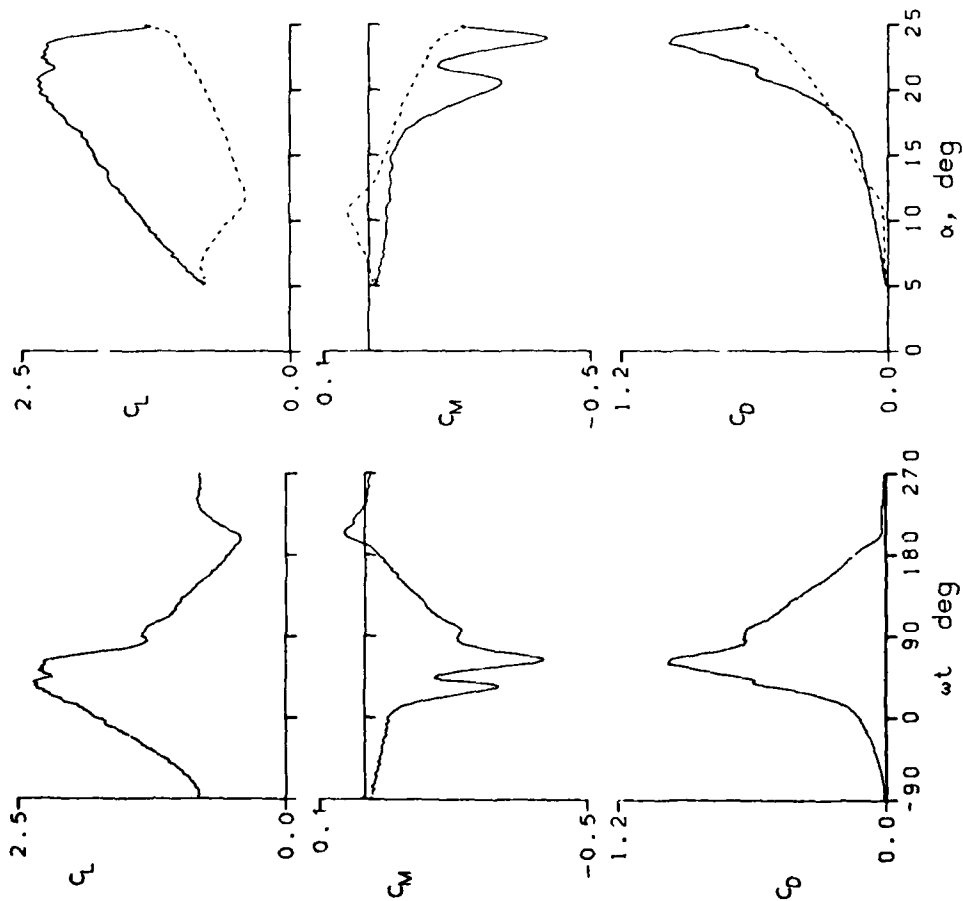


Figure 17.- Continued.

BOEING-VERTOL VR-7 - WITH TAB- AIRFOIL

FRAME : 58111 $A_0 = 14.78^\circ$ $\mu = 0.101$

$Re = 1.53 \text{ E}6$ $A_1 = 5.90^\circ$ $M = 0.109$

$C_{Lmax} = 2.44$ $C_{Mmin} = -0.41$ $C_{Dmax} = 0.95$

$\alpha_{Lmax} = 22.6^\circ$ $\xi = 0.498$ $M_{max} = 0.480$

$\alpha_{Cmin} = 14.2^\circ$ $-C_{Dmax} = 16.7$ $\alpha_{Mmax} = 21.1^\circ$

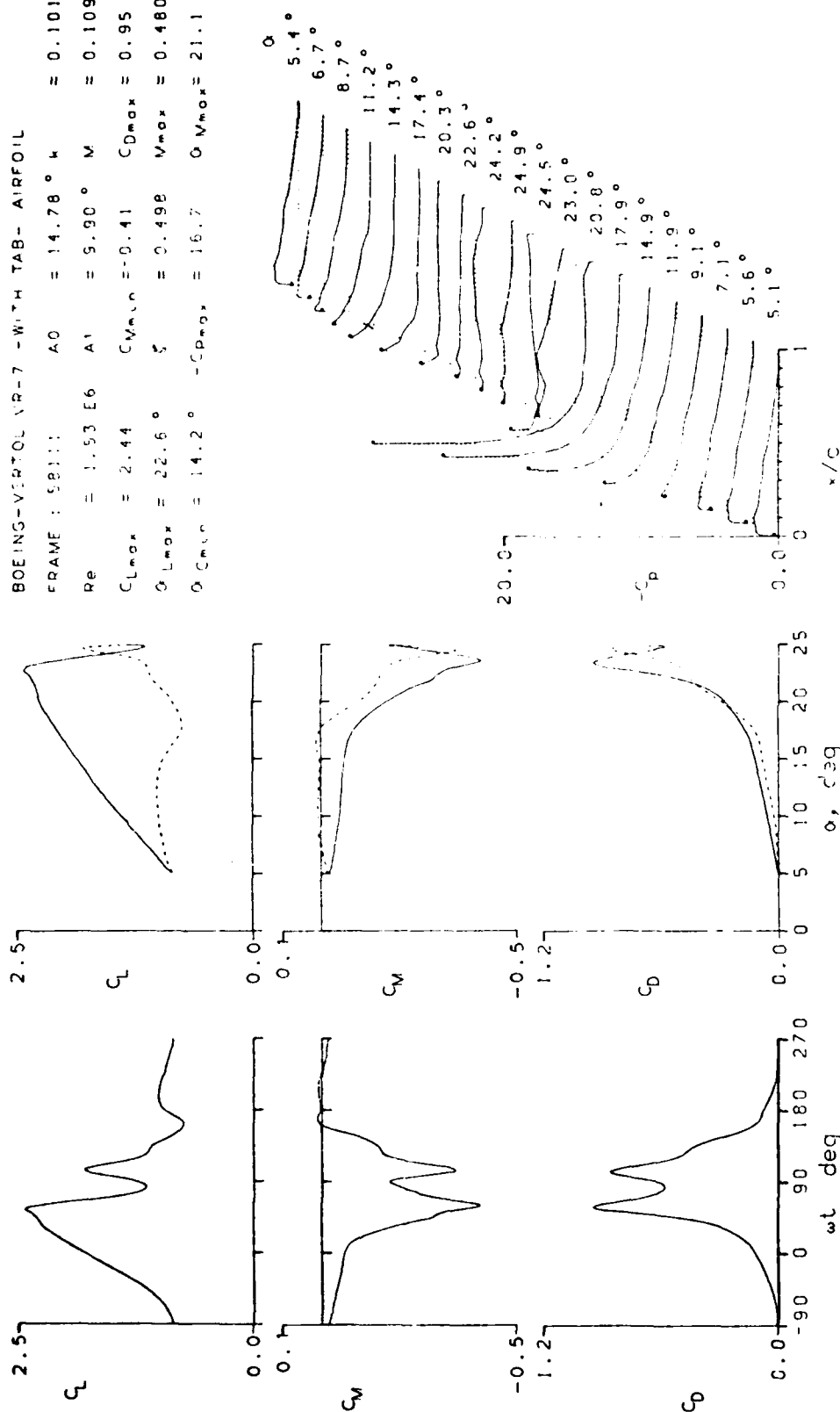


Figure 17.- Continued.

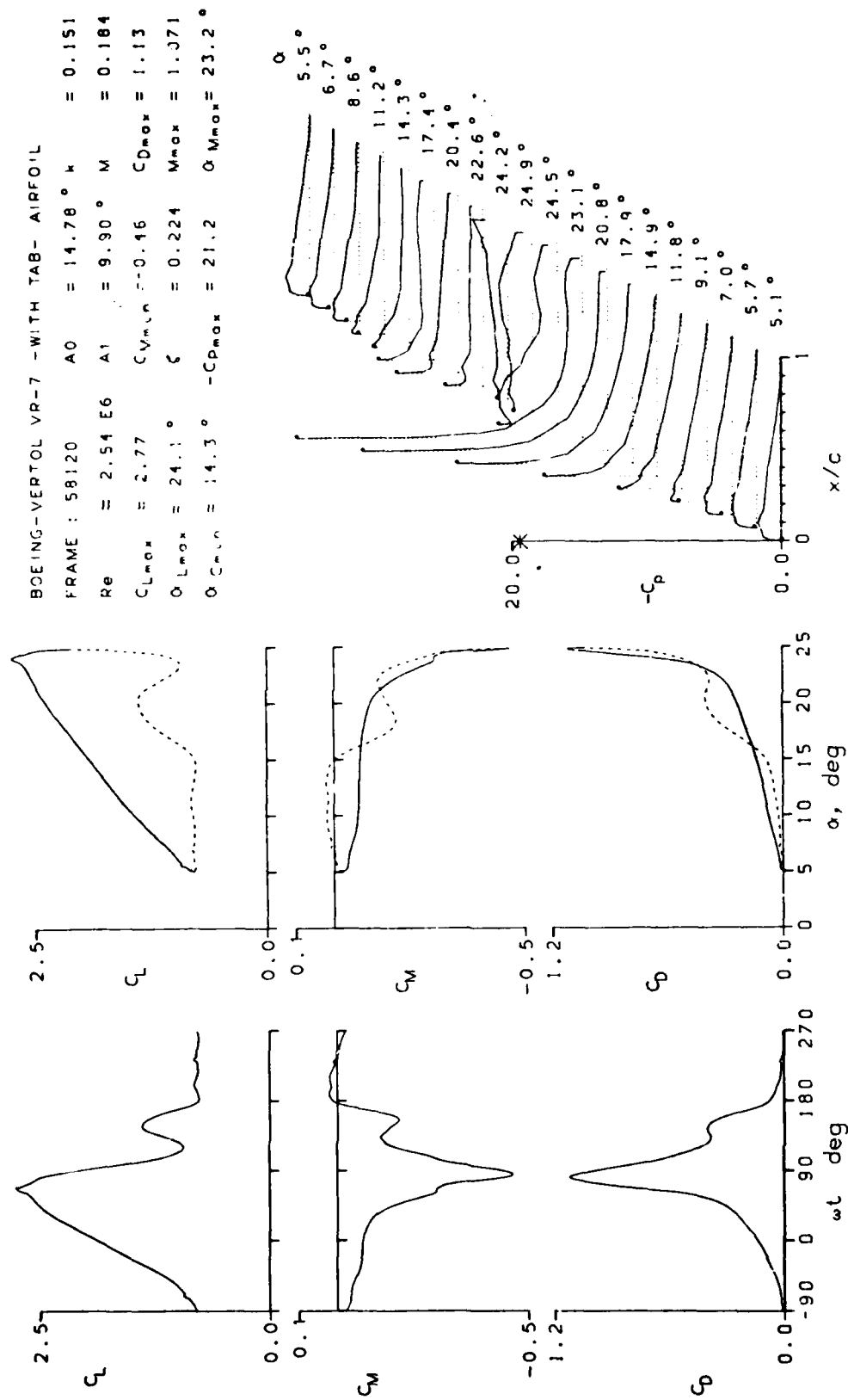


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL
 FRAME : 58121 AC = 14.79° k = 0.101
 Re = 2.53 E6 A1 = 9.90° M = 0.184
 C_{Lmax} = 2.43 C_{Mmin} = -0.42 C_{Dmax} = 0.98
 α_{Lmax} = 23.1° ζ = 0.391 M_{max} = 0.962
 α_{Cmin} = 14.3° -C_{Dmax} = 18.4 α_{Mmax} = 21.8°

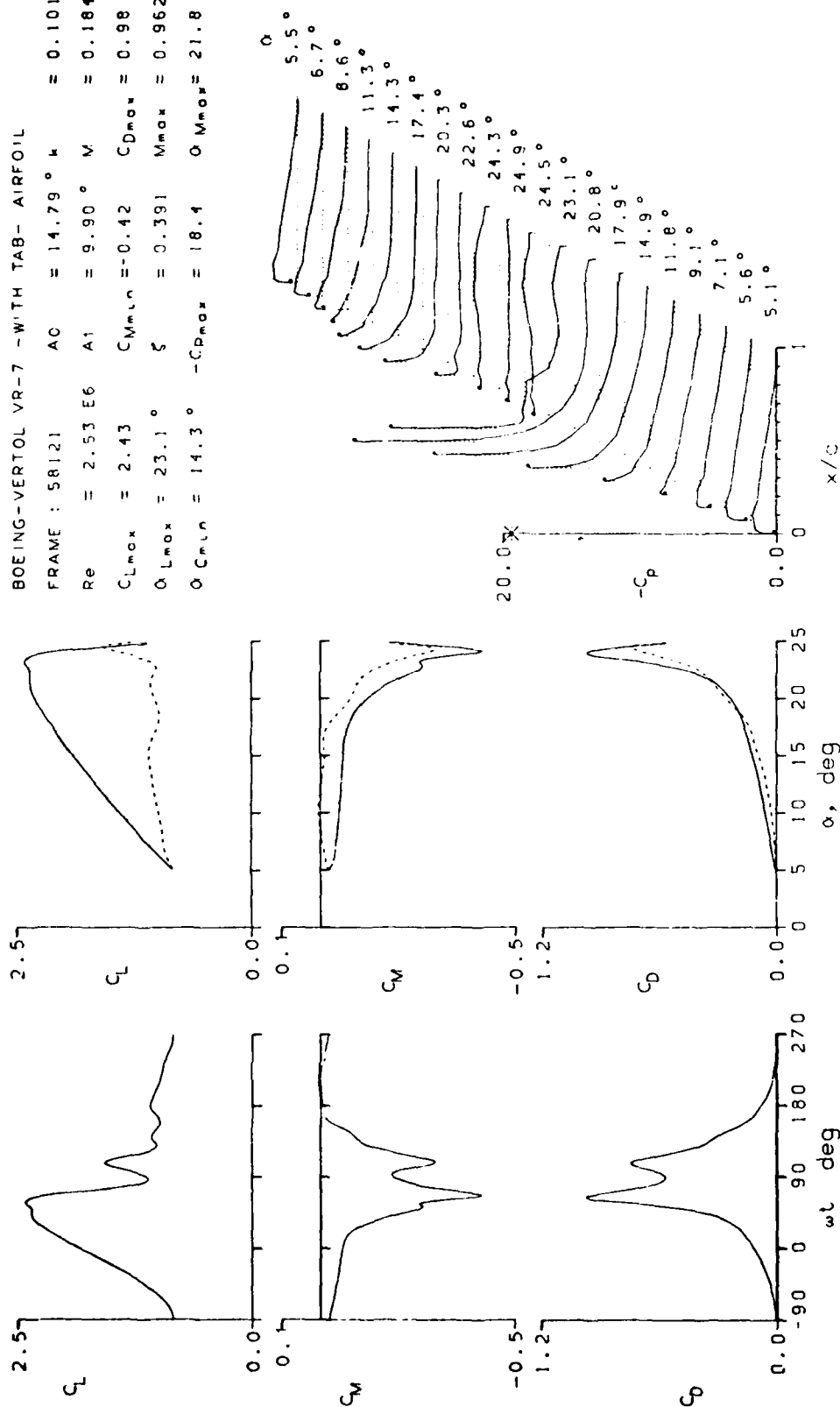


Figure 17.- Continued.

BOEING-VERTOL VR-7 -WITH TAB- AIRFOIL

FRAME : 48200 $A_0 = 12.99^\circ$ $k = 0.201$

$Re = 4.06 \text{ E}6$ $A_1 = 2.00^\circ$ $M = 0.301$

$C_{Lmax} = 1.80$ $C_{Mmin} = -0.08$ $C_{Dmax} = 0.10$

$\alpha_{Lmax} = 14.9^\circ$ $\xi = -0.867$ $M_{max} = 1.316$

$\alpha_{Cmin} = 12.9^\circ$ $-C_{Dmax} = 9.9$ $\alpha_{Mmax} = 15.0^\circ$

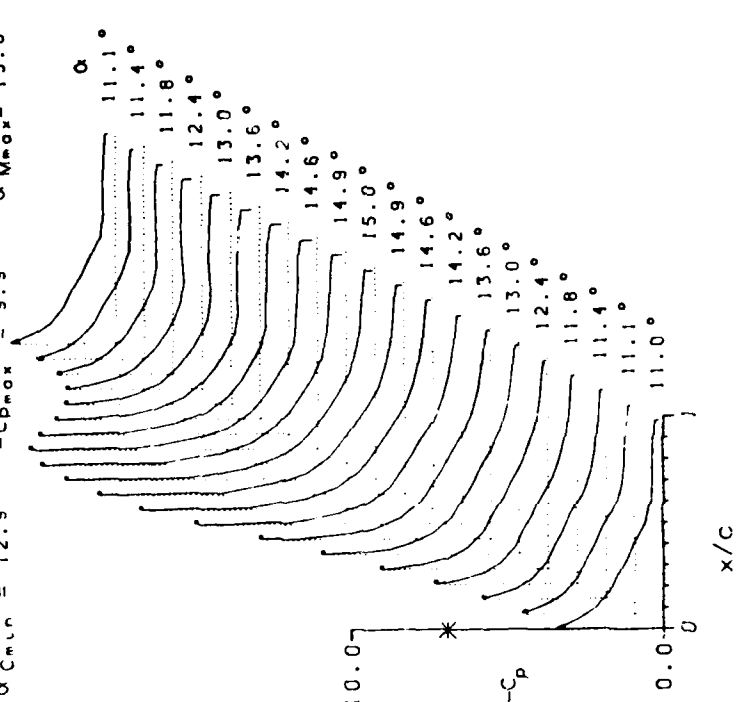
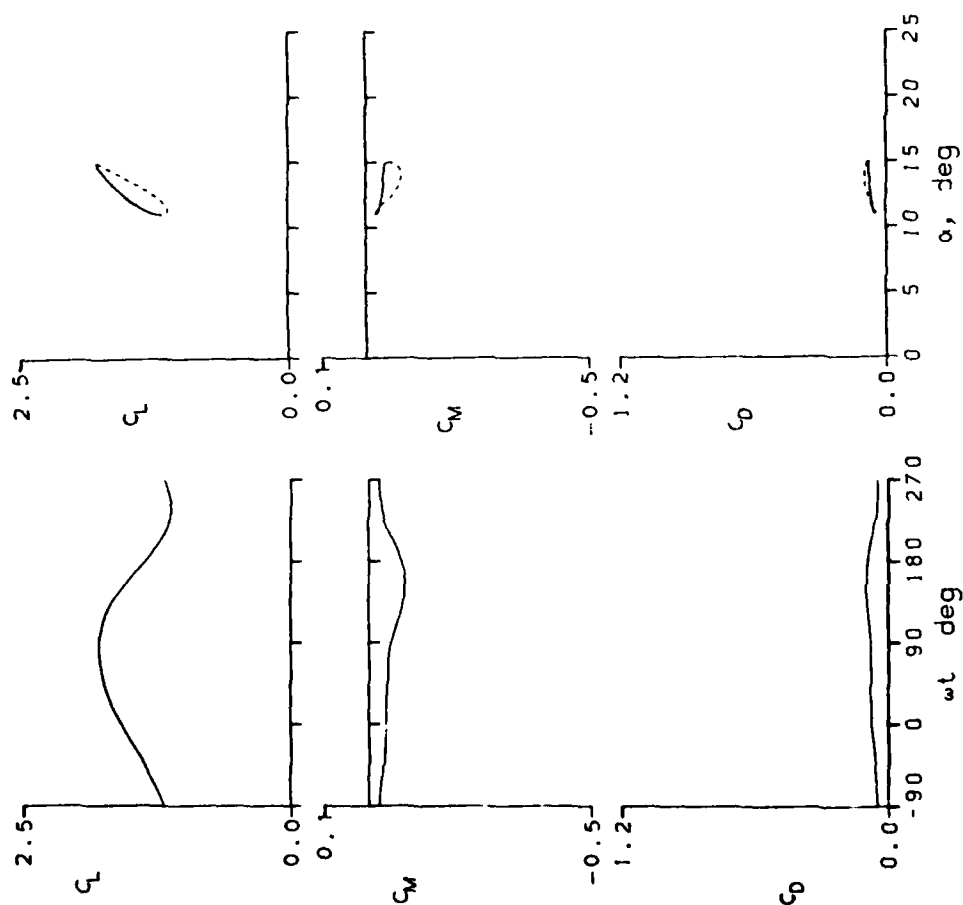


Figure 17.- Concluded.

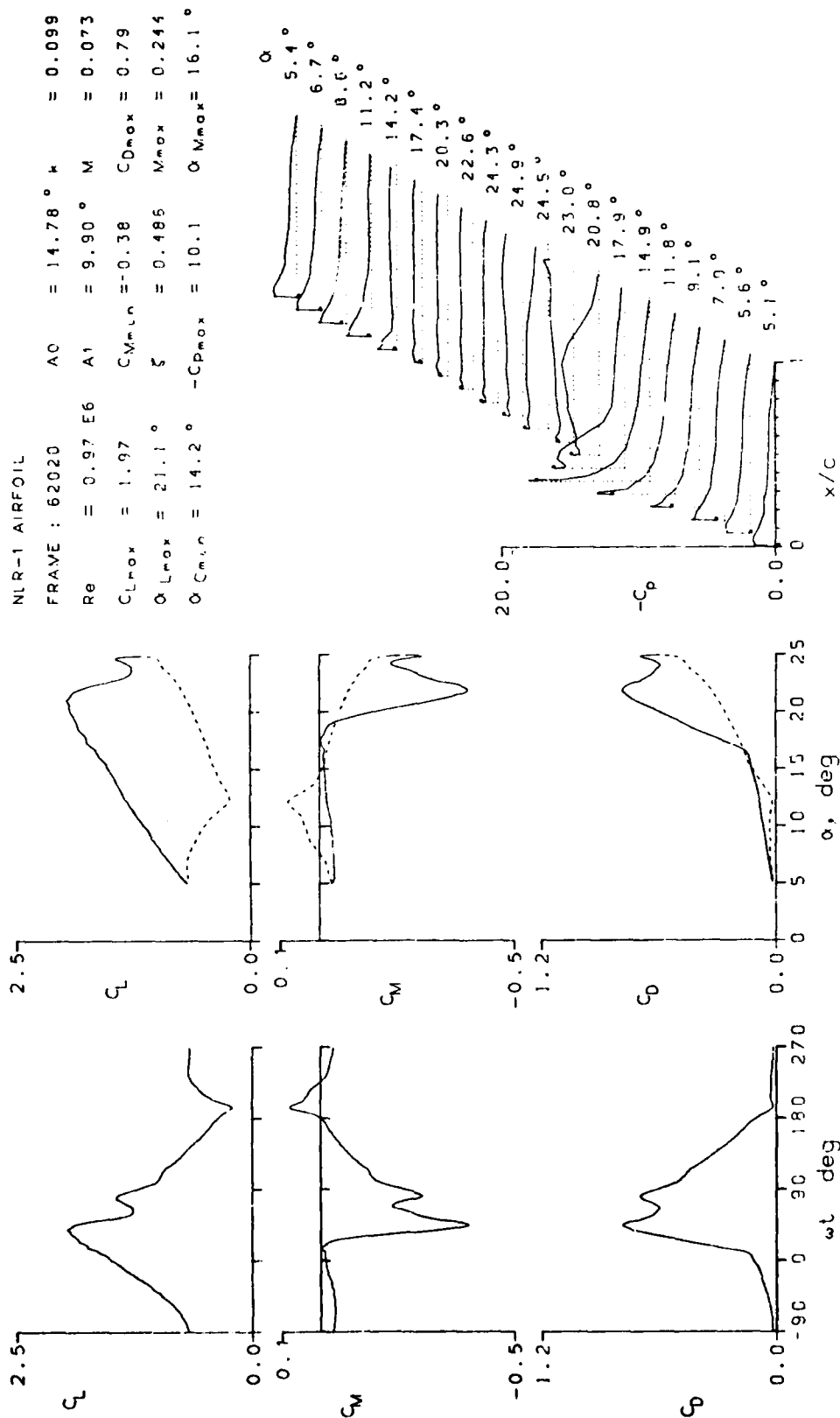


Figure 18.- Dynamic data for NLR-1 airfoil.

NLR-1 AIRFOIL

FRAME : 62104	A0 = 14.78 °	k = 0.099
Re = 1.45 E6	A1 = 9.30 °	M = 0.109
CLmax = 2.25	CMmin = -0.44	CDmax = 0.94
αLmax = 22.2 °	ξ = 0.388	Mmax = 0.450
αCMmin = 14.2 °	-CPmax = 14.7	αMmax = 18.5 °

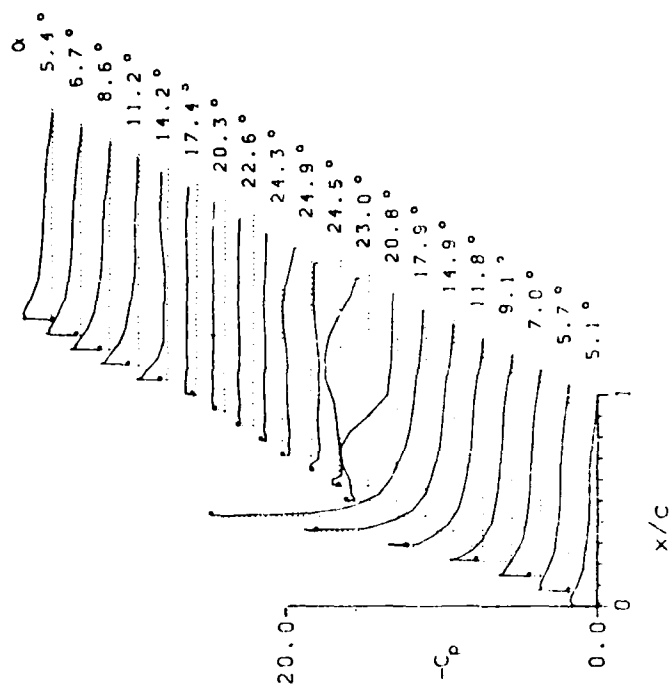
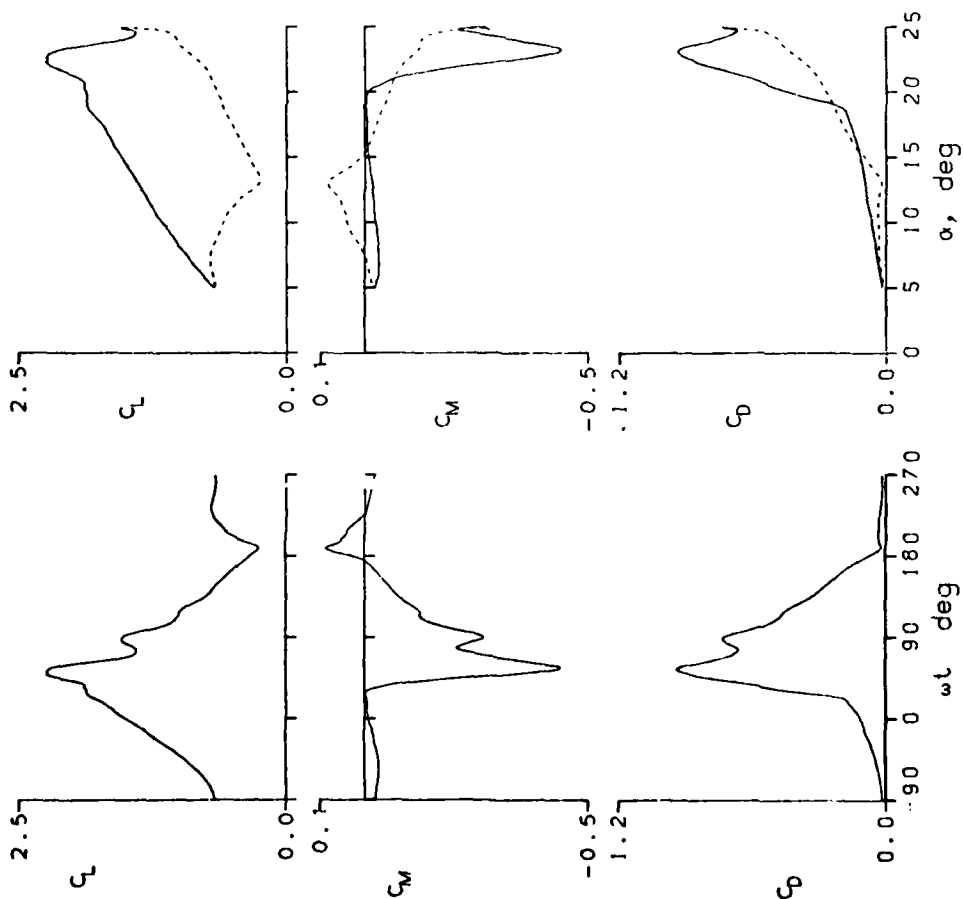


Figure 18.- Continued.

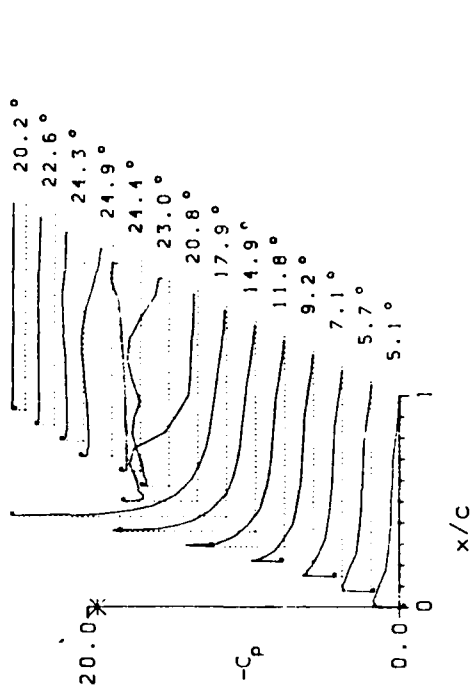
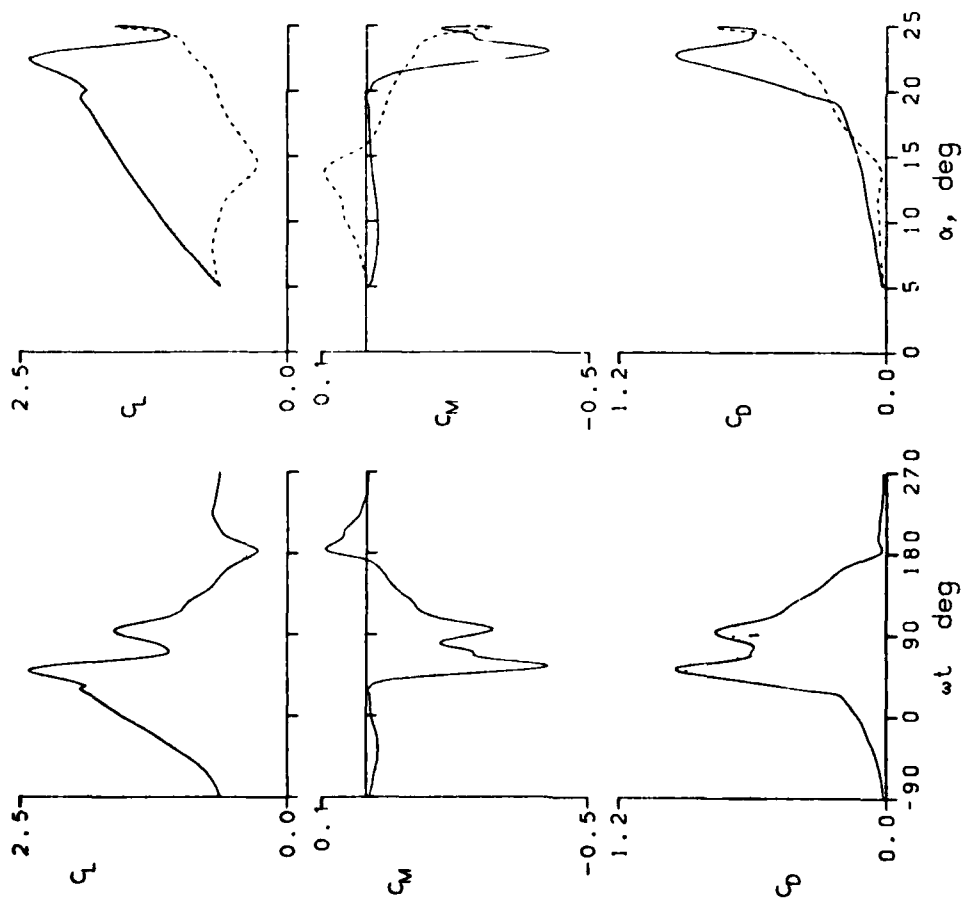


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 52114	AO = 14.79°	k = 0.100
Re = 2.70 E6	A1 = 9.90°	M = 0.199
C _{Lmax} = 2.41	C _{Mmin} = -0.43	C _{Dmax} = 0.93
α _{Lmax} = 21.8°	ζ = 0.427	M _{max} = 0.856
α _{Cmin} = 14.3°	-C _{pmax} = 13.1	α _{Mmax} = 17.9°

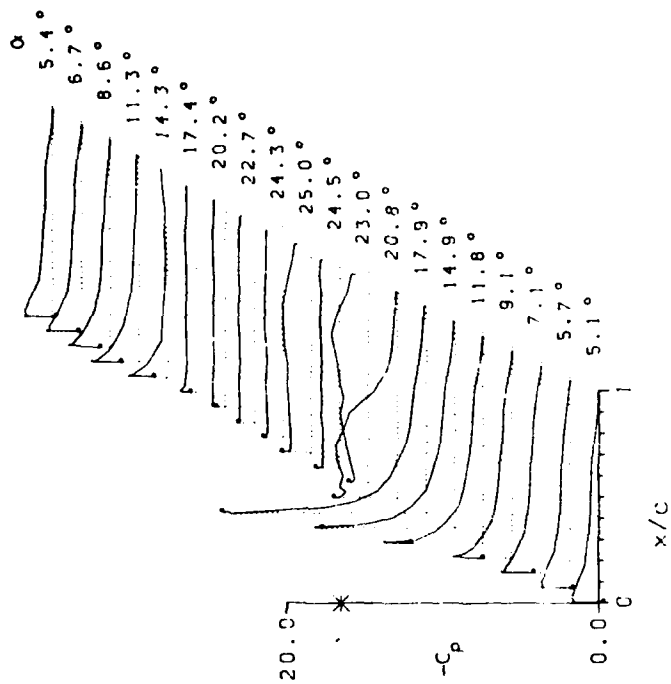
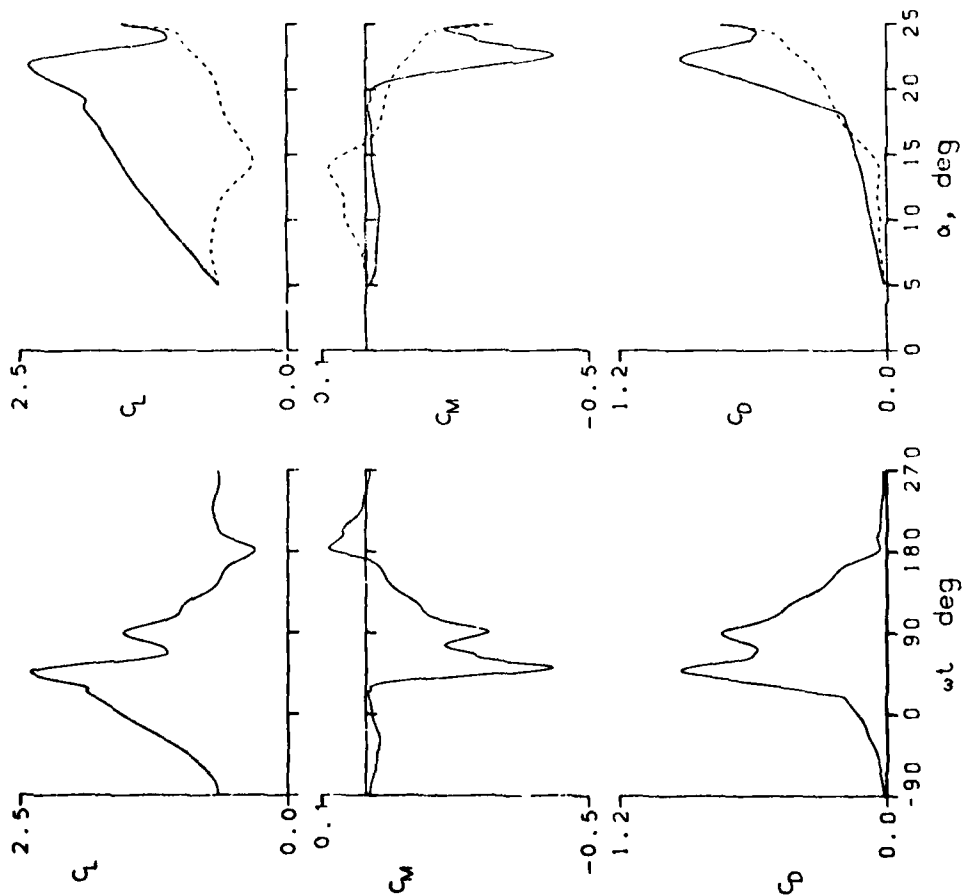


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 52121 $A_0 = 9.83^\circ$ $\mu = 0.171$
 $Re = 2.56 E6$ $A1 = 9.91^\circ$ $M = 0.200$
 $C_{Lmax} = 2.26$ $C_{Mmin} = -0.35$ $C_{Dmax} = 0.72$
 $\alpha_{Lmax} = 19.9^\circ$ $\xi = 0.034$ $M_{max} = 0.855$
 $\alpha_{Cmin} = 9.4^\circ$ $-C_{Dmax} = 13.0$ $\alpha_{Mmax} = 18.3^\circ$

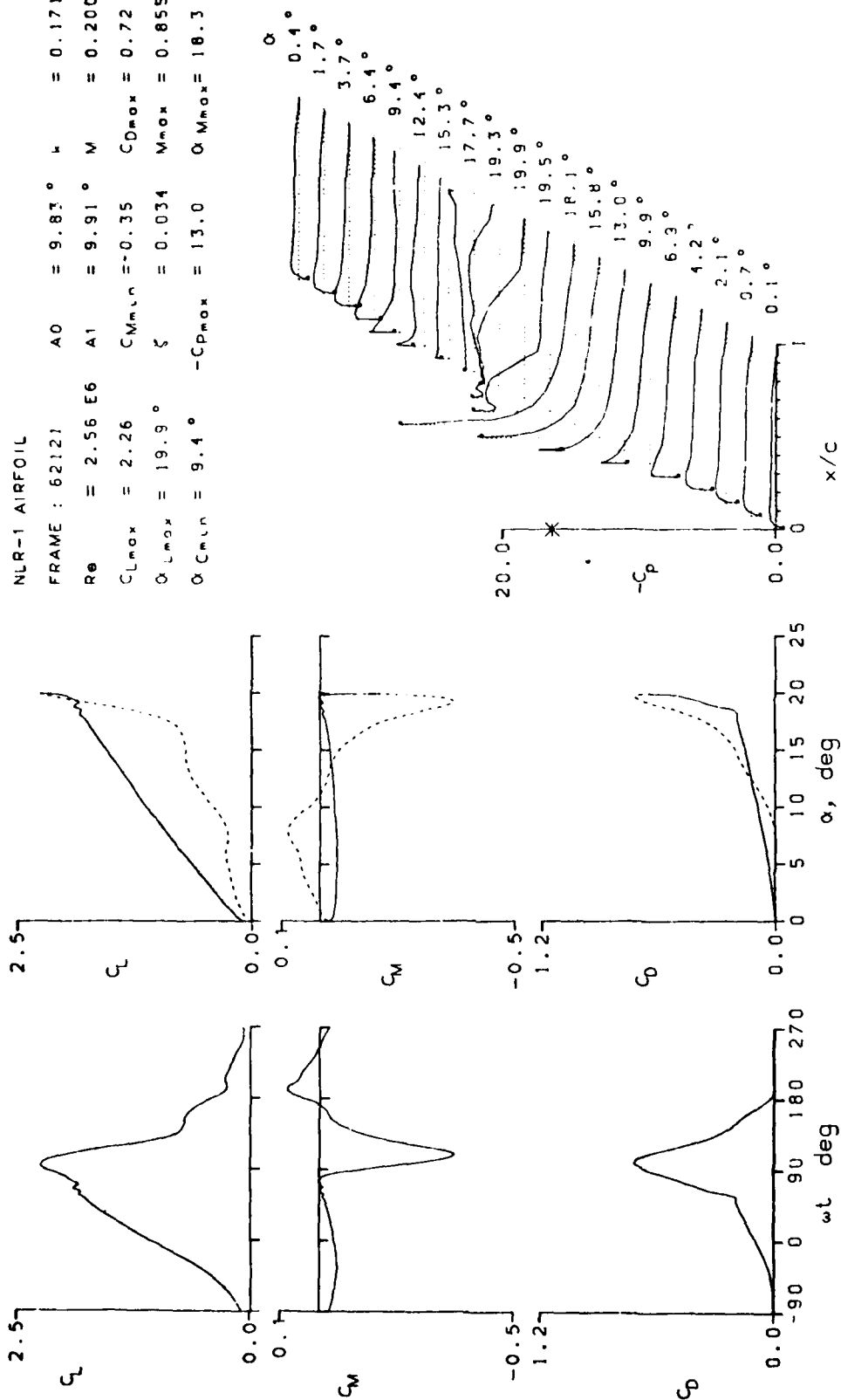


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62201 $A_0 = 14.95^\circ$ $\mu = 0.283$
 $Re = 2.54 E6$ $A_1 = 4.90^\circ$ $M = 0.200$
 $C_{Lmax} = 2.27$ $C_{Mmin} = -0.36$ $C_{Dmax} = 0.72$
 $\alpha_{Lmax} = 19.8^\circ$ $\zeta = -1.213$ $M_{max} = 0.854$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 12.9$ $\alpha_{Mmax} = 18.2^\circ$

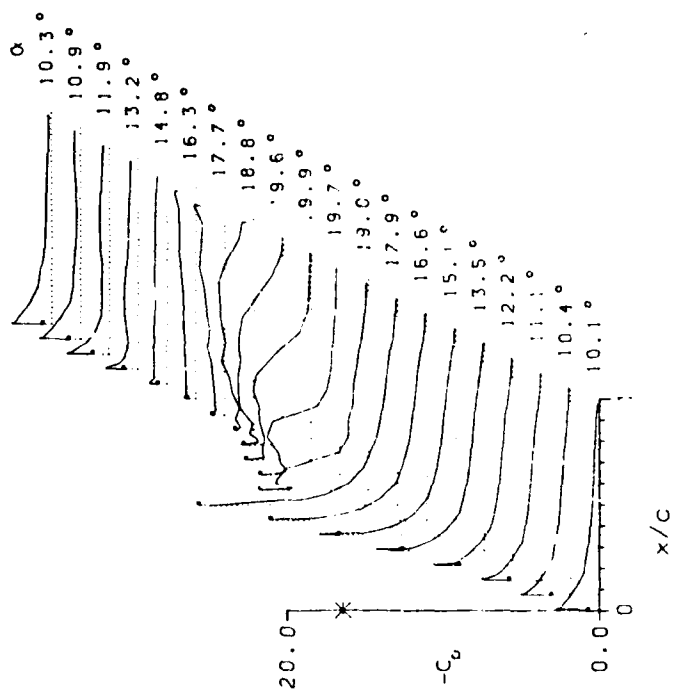
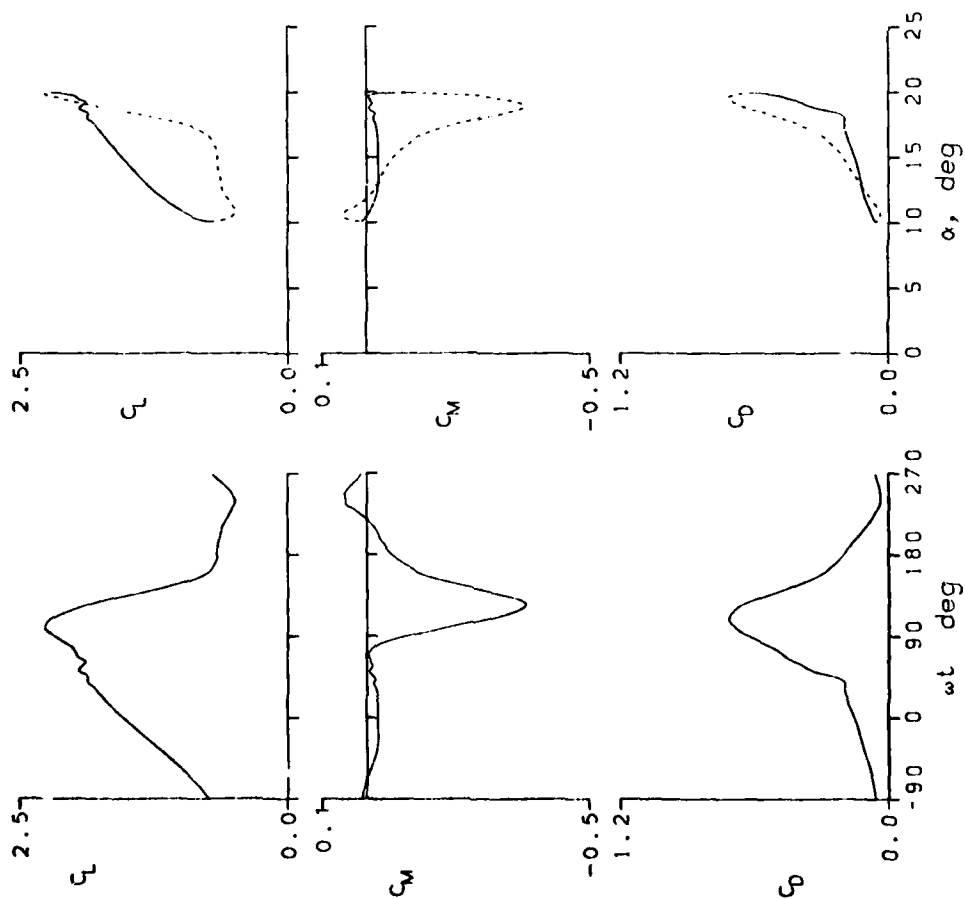


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62202 $A_0 = 14.97^\circ$ $\mu = 0.171$
 $Re = 2.53 \times 10^6$ $A^* = 4.89^\circ$ $M = 0.199$
 $C_{Lmax} = 2.25$ $C_{Mmin} = -0.36$ $C_{Dmax} = 0.75$
 $\alpha_{Lmax} = 19.8^\circ$ $\xi = -0.424$ $V_{max} = 0.841$
 $\alpha_{Cmin} = 14.8^\circ$ $-C_{Dmax} = 12.7$ $\alpha_{Mmax} = 17.7^\circ$

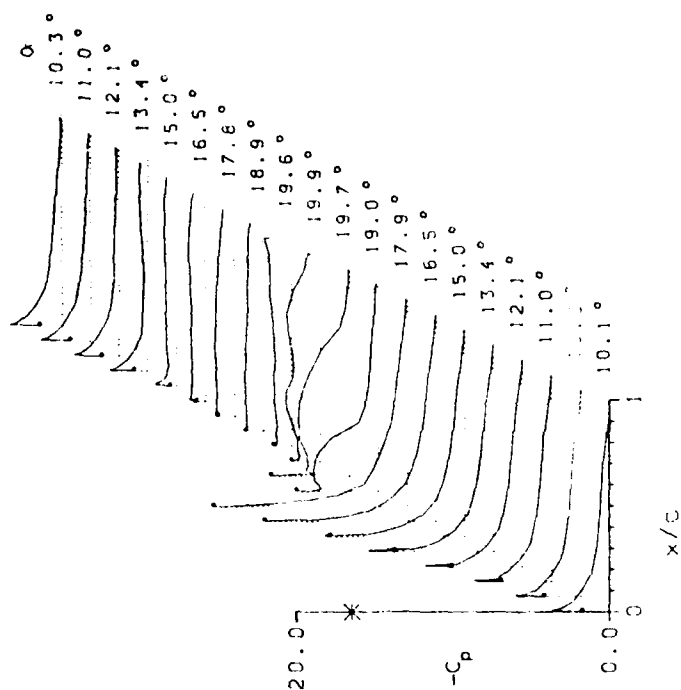
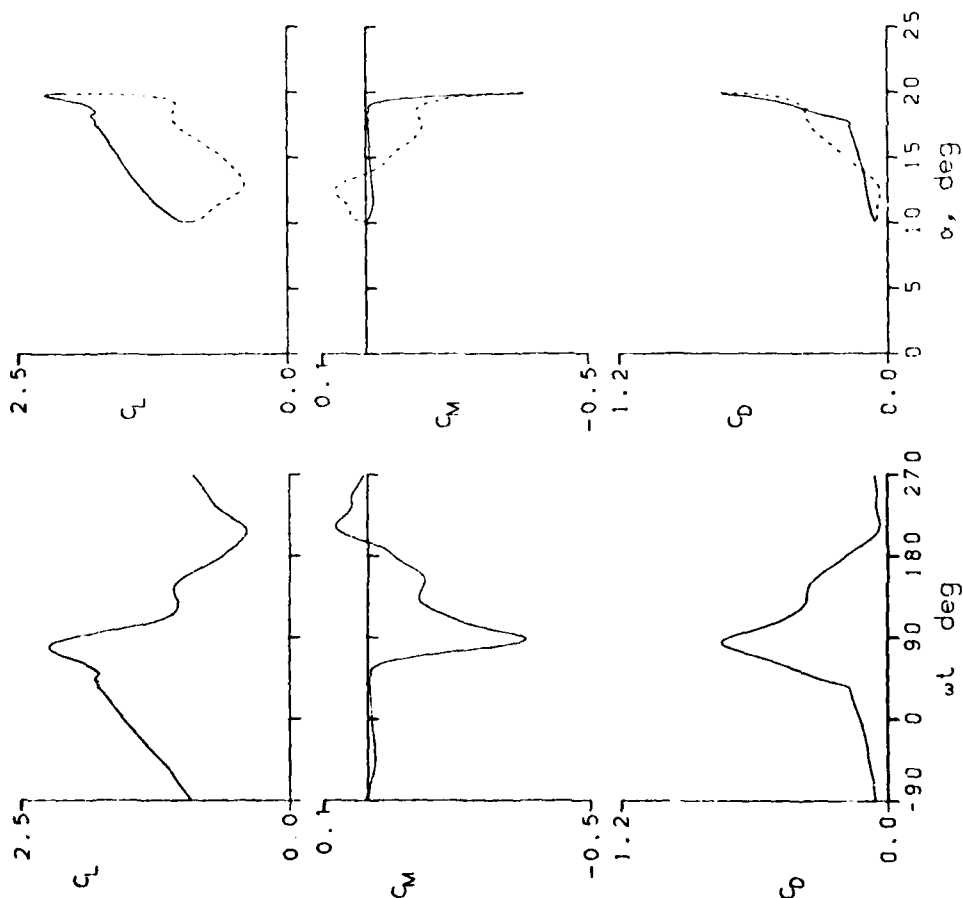


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62208 $A_0 = 14.78^\circ$ $k = 0.097$
 $R_0 = 2.78 \text{ [6]}$ $A^* = 9.89^\circ$ $M = 0.220$
 $C_{Lmax} = 2.33$ $C_{Mmin} = -0.78$ $C_{Dmax} = 0.84$
 $\alpha_{Lmax} = 20.7^\circ$ $\zeta = 0.514$ $M_{max} = 0.860$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Dmax} = 10.7$ $\alpha_{Mmax} = 16.4^\circ$

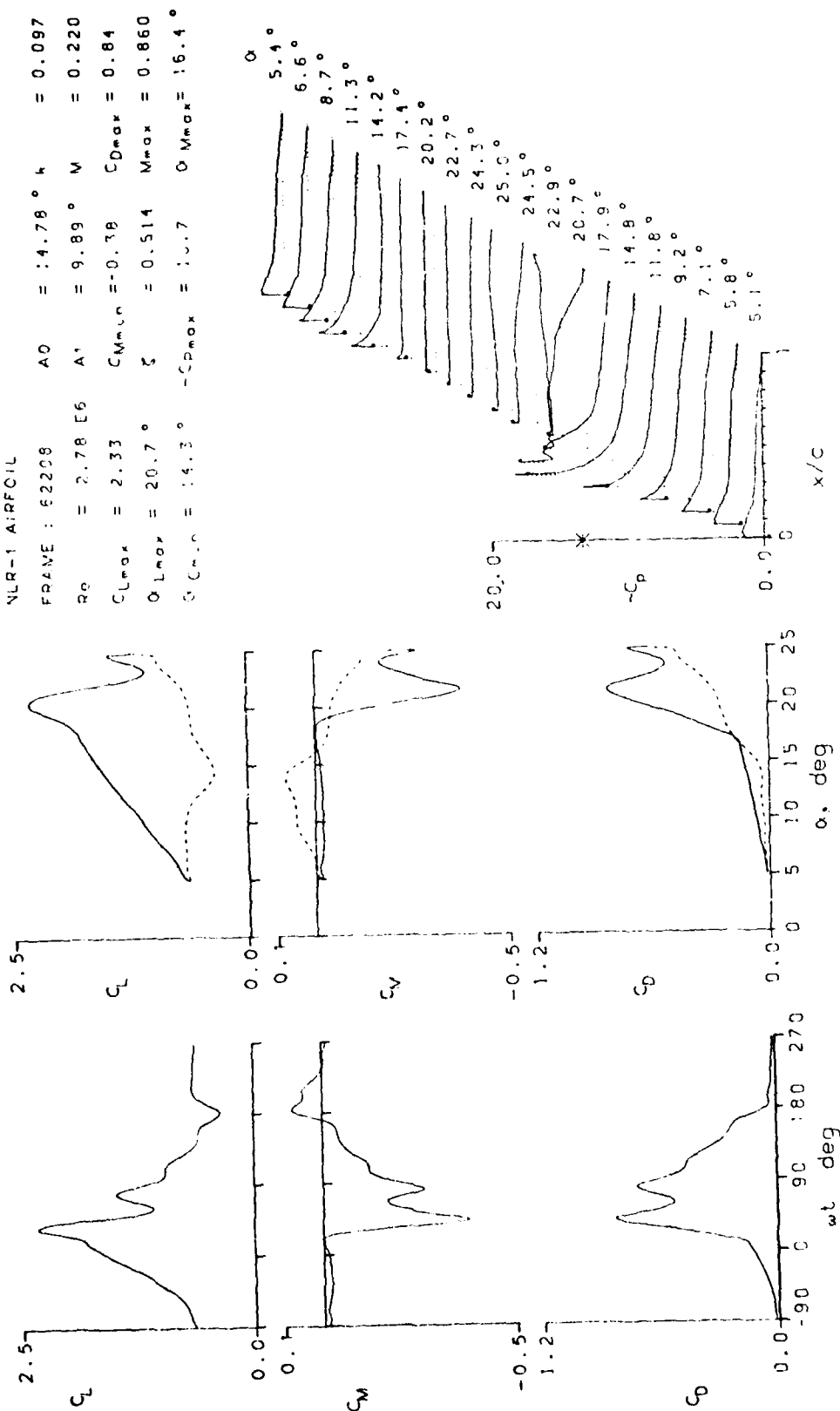


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 6221C	A0 = 14.78°	μ = 0.097
Re = 2.11 E6	A1 = 9.90°	M = 0.250
CLmax = 2.20	CMmin = -0.37	CDmax = 0.77
αcrit = 20.0°	ξ = 0.615	Mmax = 1.010
αCMcr = 14.3°	-CDcr = 10.4	αMmax = 15.5°

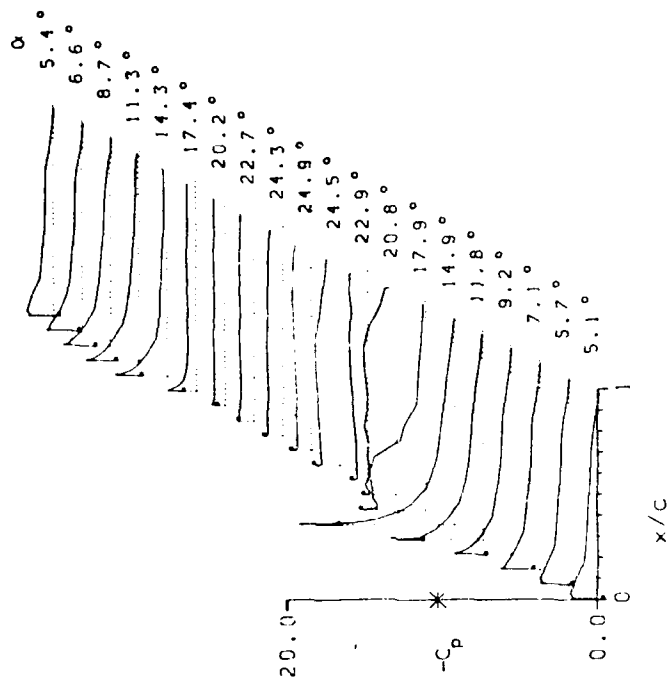
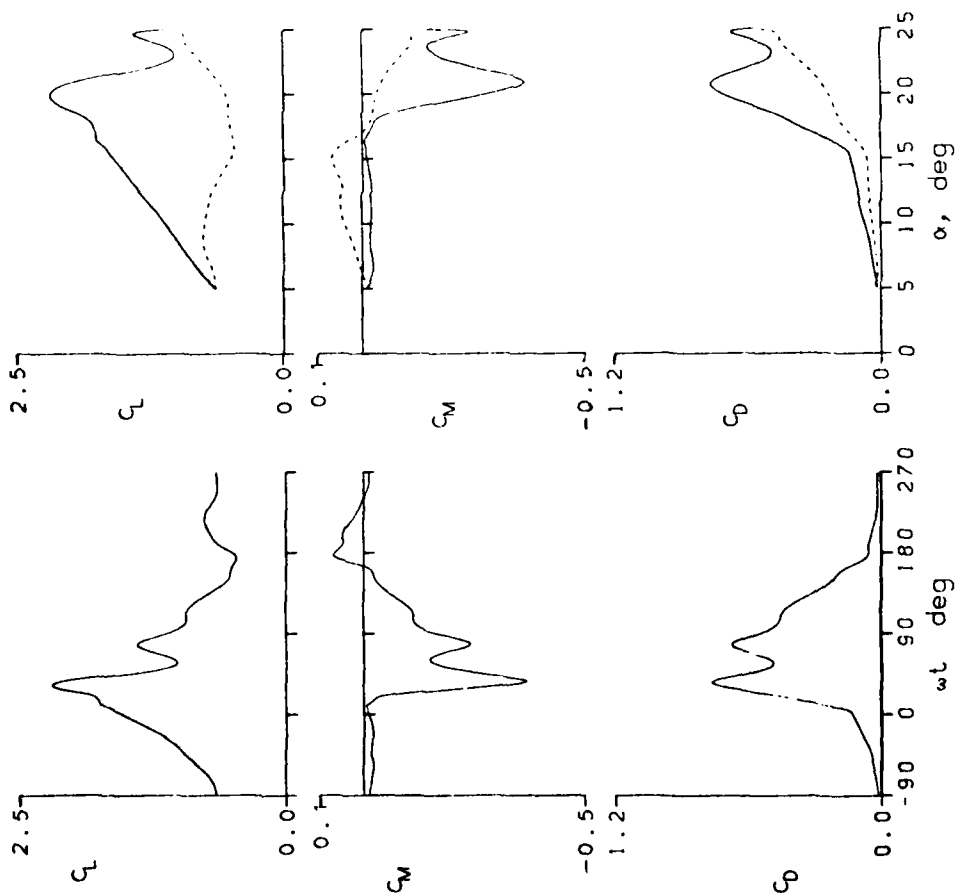


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 62218	A0 = 14.78°	k = 0.097
Re = 3.44 E6	A1 = 9.90°	M = 0.280
C _{lmax} = 2.04	C _{Mmin} = -0.34	C _{Dmax} = 0.68
α _{lmax} = 19.4°	ξ = 0.646	M _{max} = 1.117
α _{Cmin} = 14.3°	-C _{pmax} = 9.4	α _{Mmax} = 14.6°

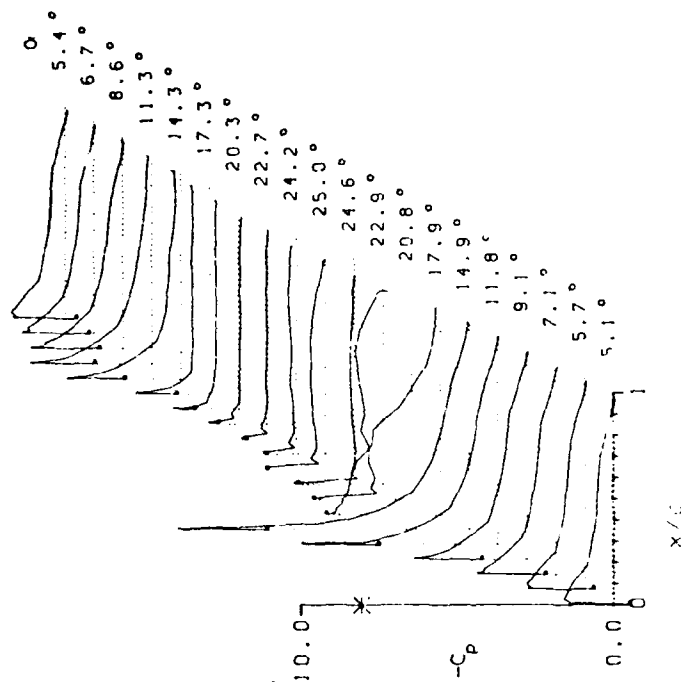
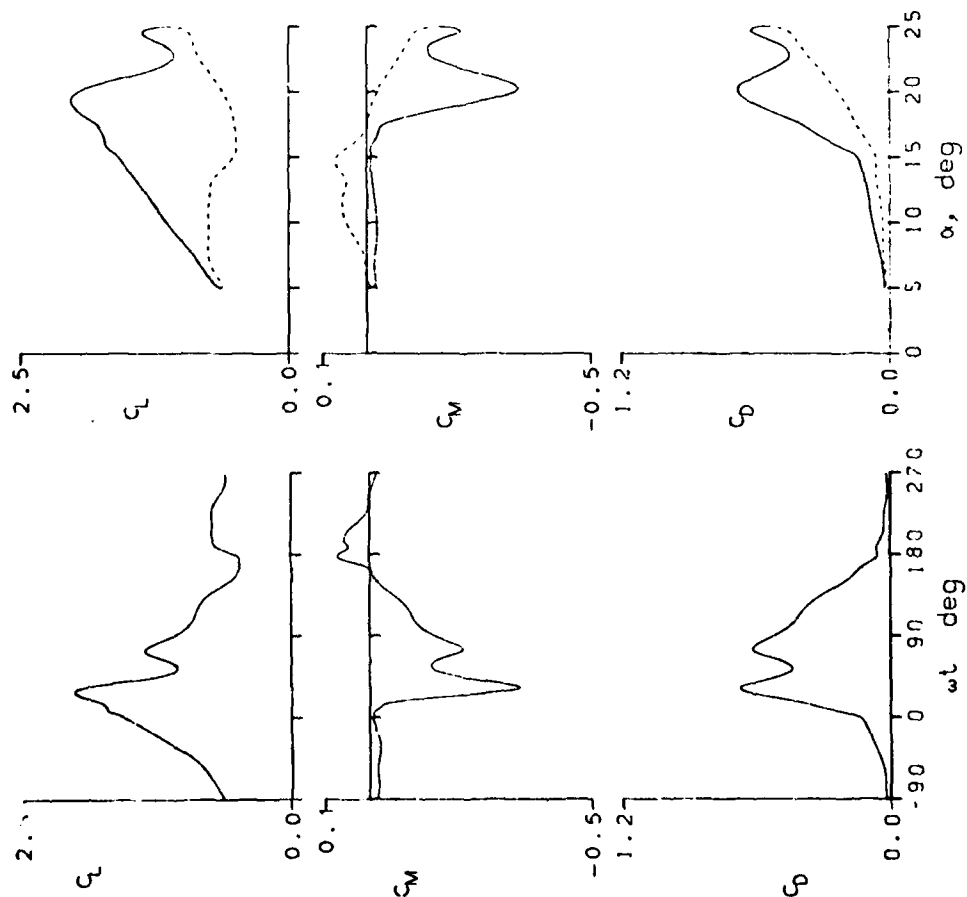


Figure 18.- Continued.

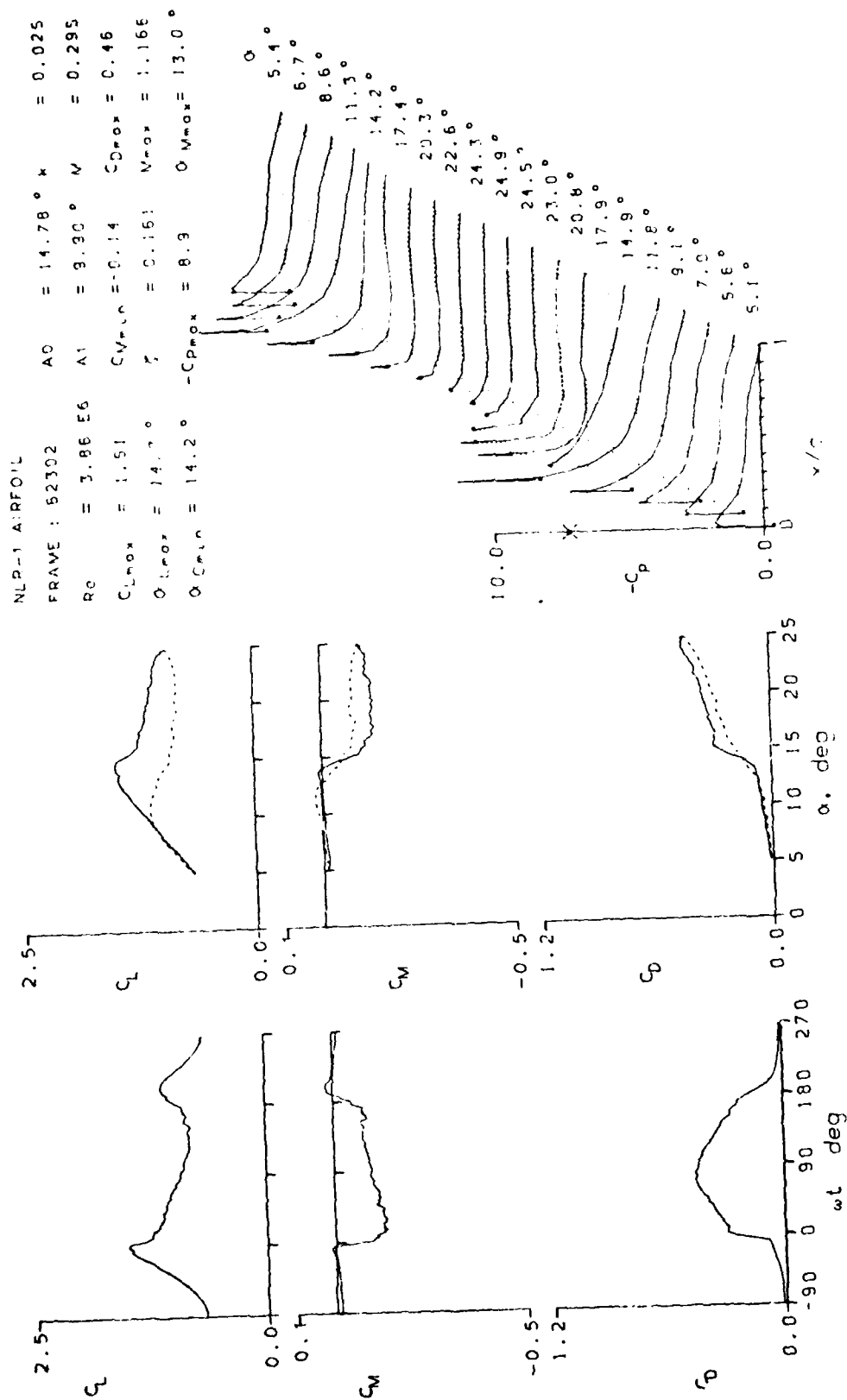


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62304 $A_0 = 14.78^\circ$ $k = 0.050$
 $Re = 3.82 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.294$
 $CL_{max} = 1.71$ $CM_{min} = -0.15$ $CD_{max} = 0.46$
 $\alpha_{L_{max}} = 16.1^\circ$ $\zeta = 0.256$ $M_{max} = 1.169$
 $\alpha_{C_{min}} = 14.3^\circ$ $-CD_{max} = 9.0$ $\alpha_{M_{max}} = 13.6^\circ$

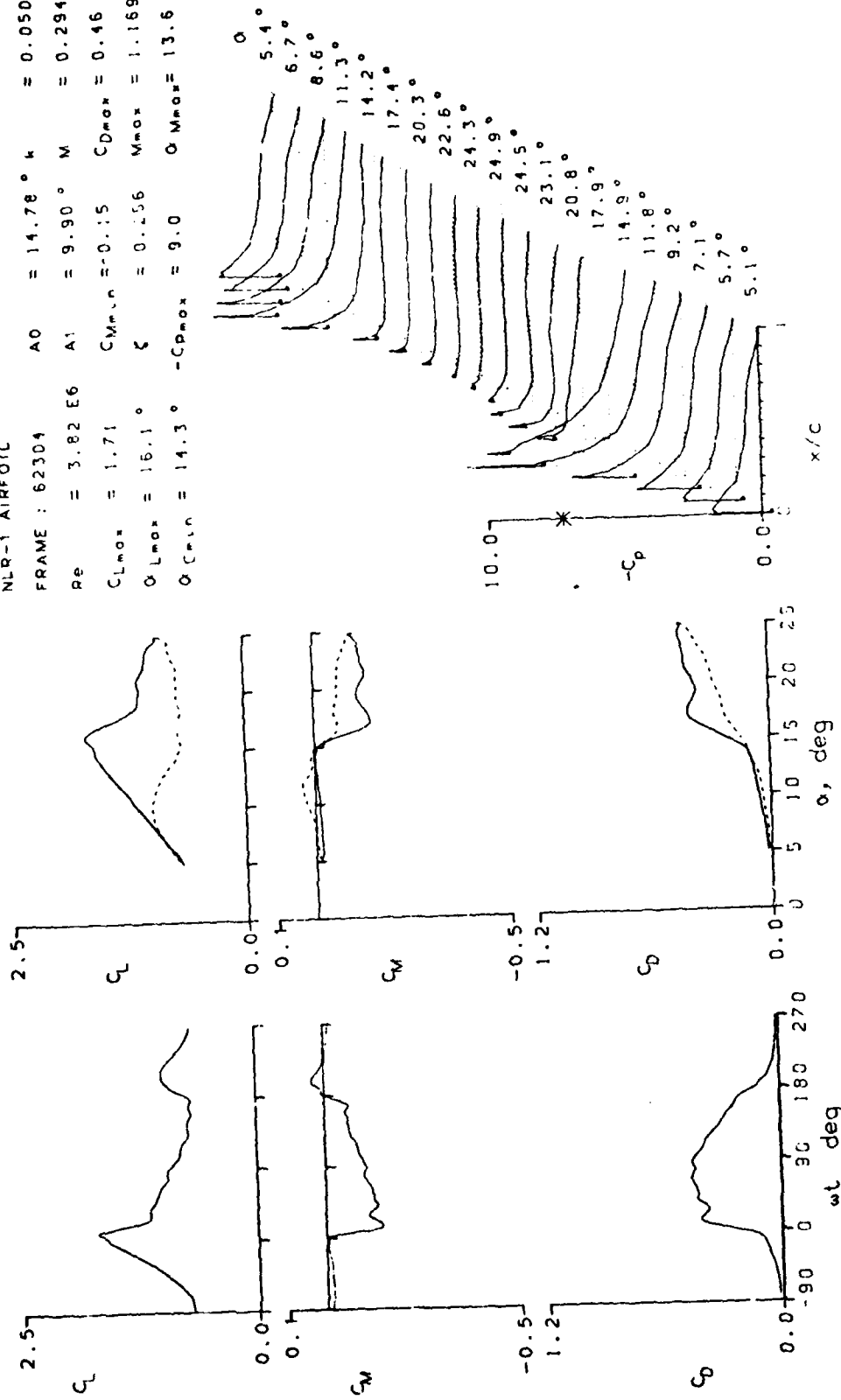


Figure 18.- Continued.

NLR-1 AIRFOIL
 PRANDTL : 62307 $AC = 14.78^\circ$ $M = 0.099$
 $Re = 7.01 \times 10^6$ $A1 = 9.90^\circ$ $M = 0.294$
 $C_{Lmax} = 2.03$ $C_{Mmax} = -0.32$ $C_{Dmax} = 0.68$
 $\alpha_{max} = 19.1^\circ$ $\zeta = 0.633$ $M_{max} = 1.18$
 $\alpha_{C_{Lmax}} = 14.4^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 14.4^\circ$

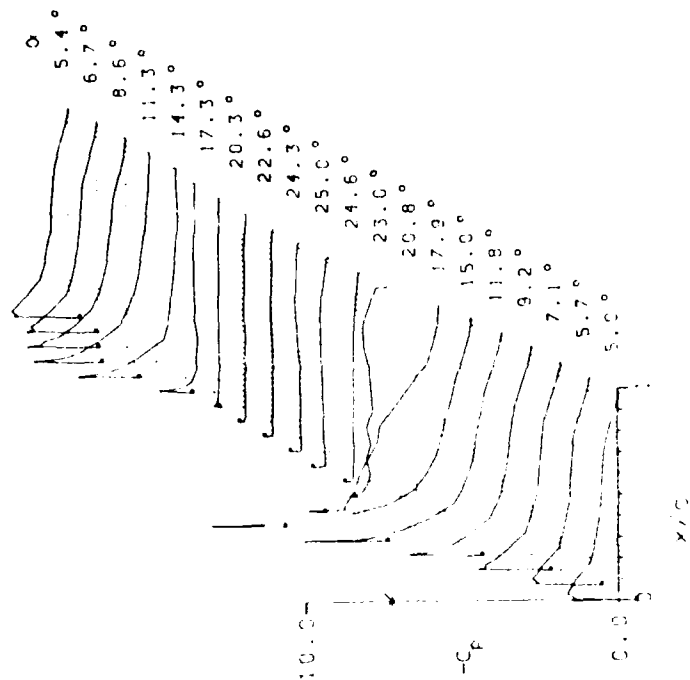
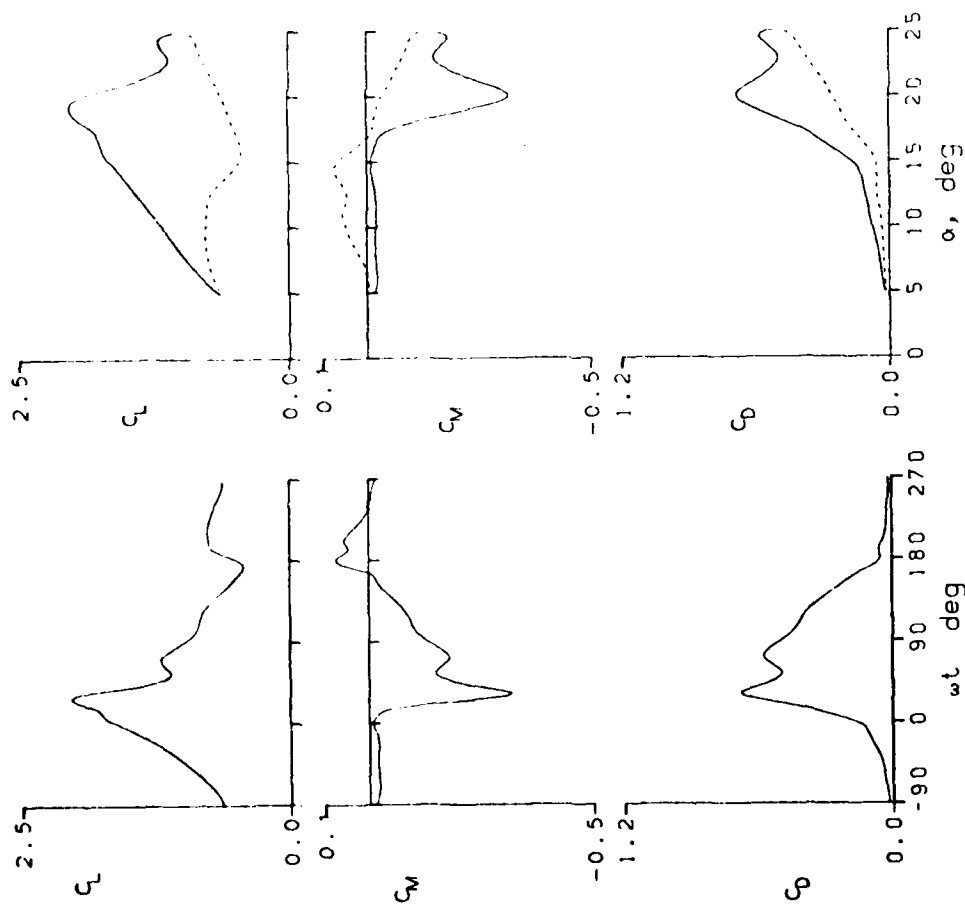


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 62309	A0 = 14.87°	k = 0.152
Re = 3.70 E6	A1 = 9.89°	M = 0.287
CLmax = 2.24	CMmin = -0.44	CDmax = 0.90
α Lmax = 21.8°	ξ = 0.608	Mmax = 1.160
α CMmin = 14.5°	-CDmax = 9.4	α Mmax = 15.3°

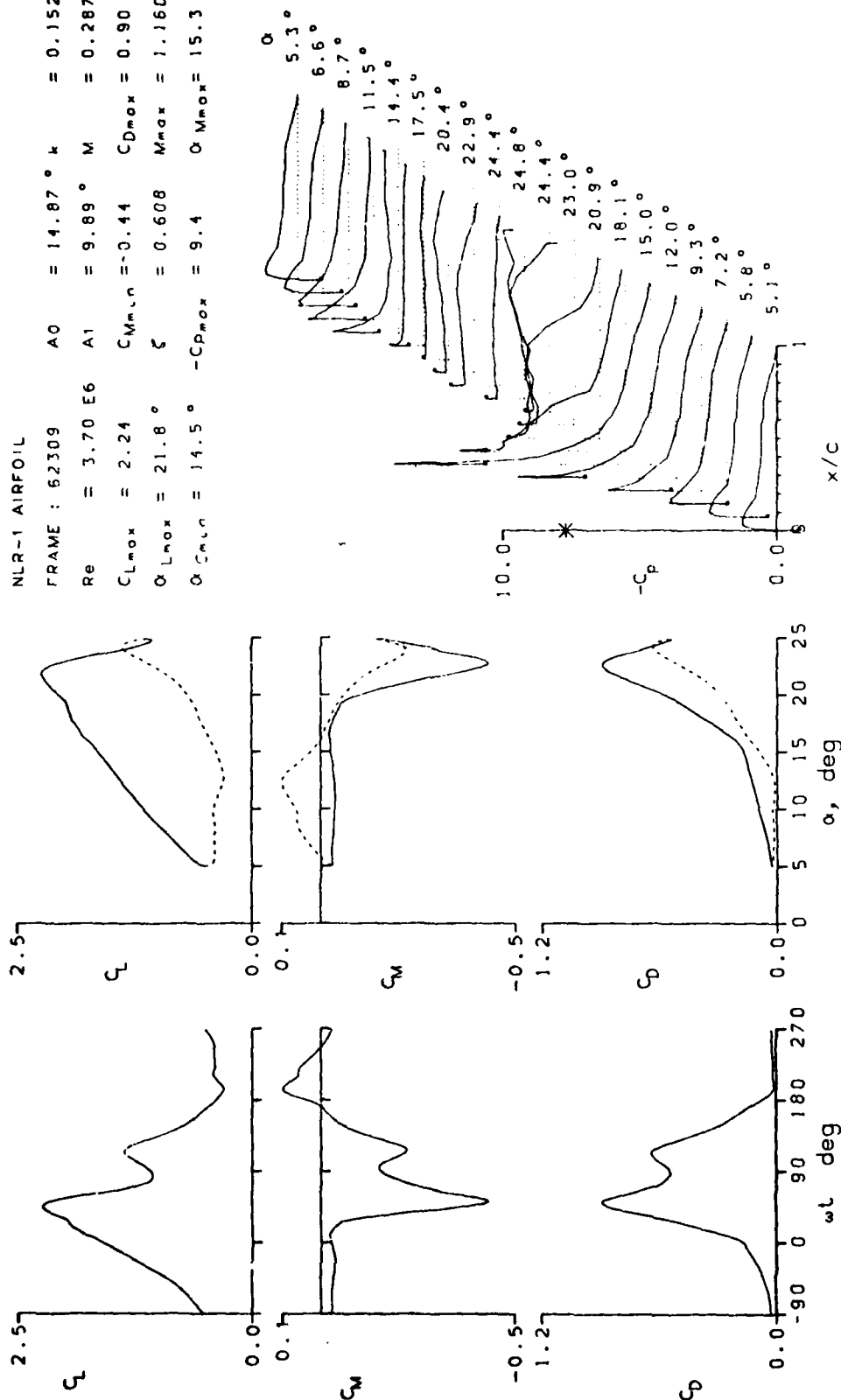


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62317 $\lambda_0 = 9.84^\circ$ $\mu = 0.010$
 $Re = 3.73 E6$ $A1 = 9.90^\circ$ $M = 0.301$
 $C_{Lmax} = 1.40$ $C_{Mmax} = -0.11$ $\alpha_{Dmax} = 0.31$
 $\alpha_{Lmax} = 13.3^\circ$ $\xi = 0.043$ $M_{max} = 1.148$
 $\alpha_{Cmin} = 9.4^\circ$ $-C_{Dmax} = 8.4$ $\alpha_{Mmax} = 13.0^\circ$

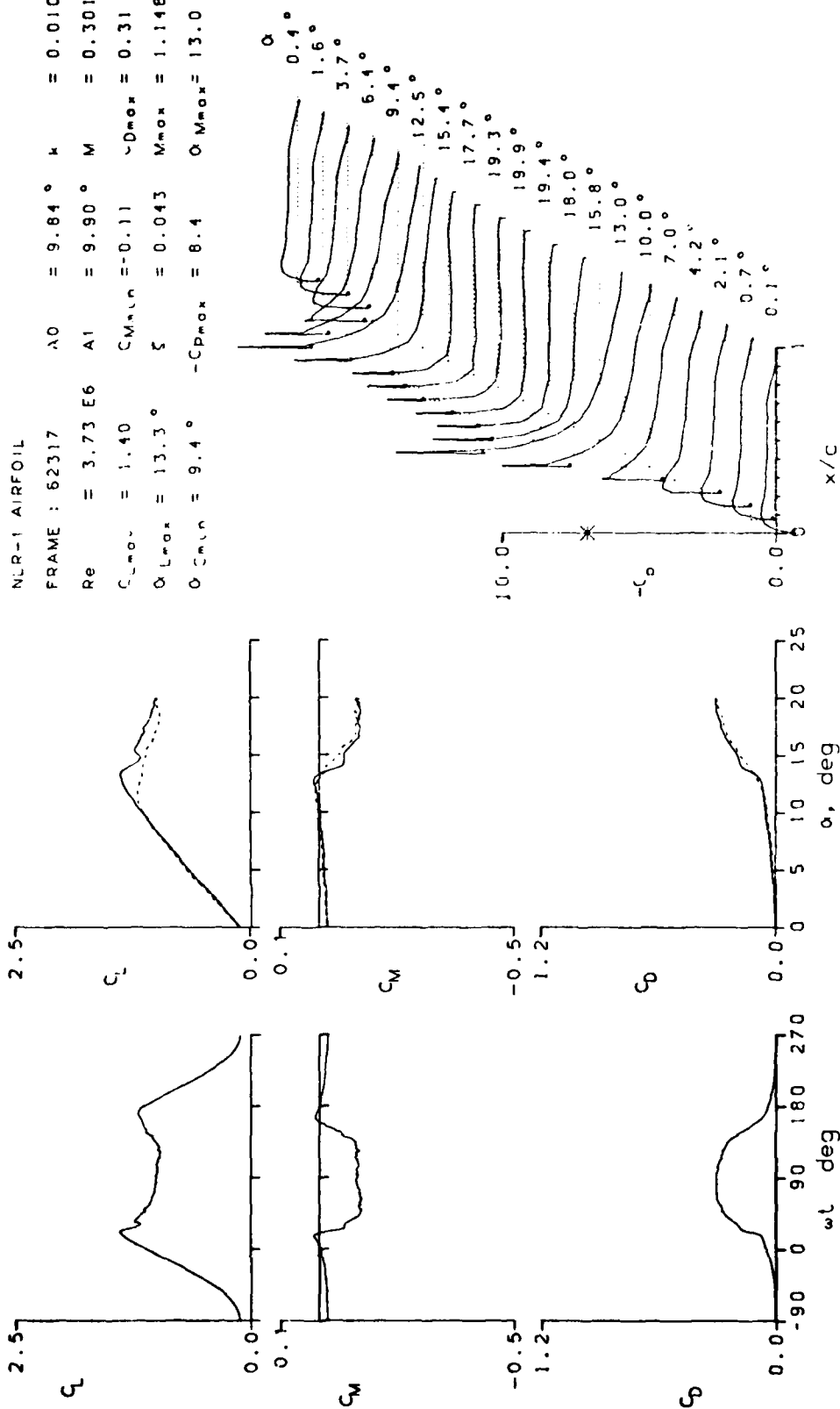


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62320 $A_0 = 9.83^\circ$ $k = 0.024$
 $Re = 3.70 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.51$ $C_{Mmin} = -0.14$ $C_{Dmax} = 0.33$
 $\alpha_{Lmax} = 14.5^\circ$ $\zeta = 0.094$ $M_{max} = 1.163$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Pmax} = 6.5$ $\alpha_{Mmax} = 13.0^\circ$

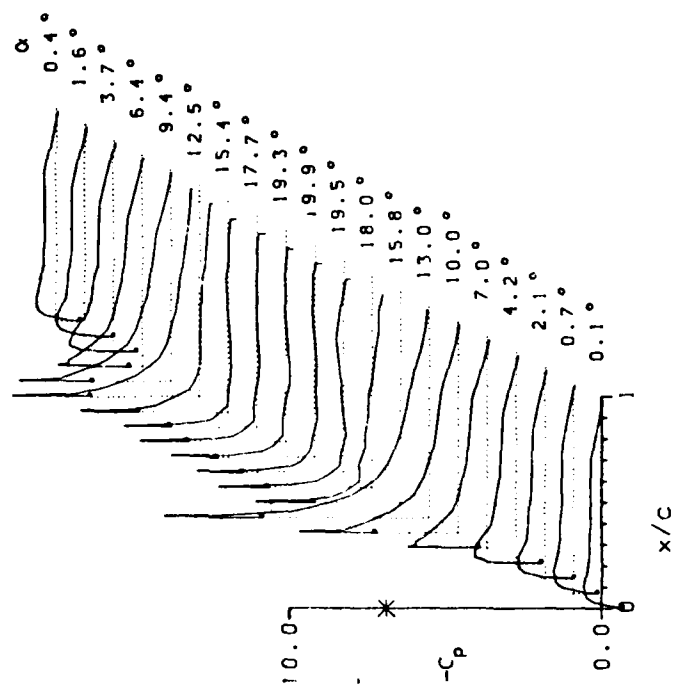
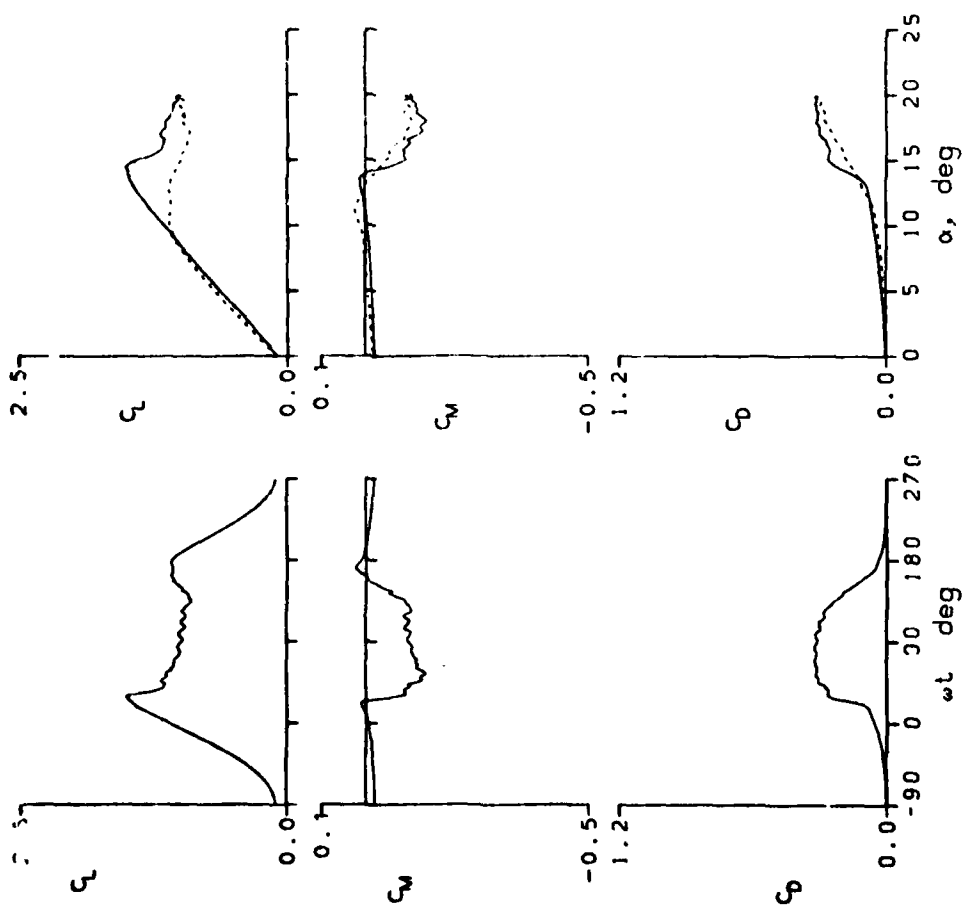


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62322
 $Re = 3.69 \text{ E}6$
 $C_{Lmax} = 1.68$
 $\alpha_{Lmax} = 15.6^\circ$
 $\alpha_{Cmin} = 9.4^\circ$
 $A0 = 9.83^\circ$
 $A1 = 9.90^\circ$
 $C_{Mmin} = -0.17$
 $\zeta = 0.194$
 $-C_{Dmax} = 8.6$
 $\mu = 0.048$
 $M = 0.301$
 $C_{Dmax} = 0.38$
 $Mmax = 1.175$
 $\alpha_{Mmax} = 13.3^\circ$

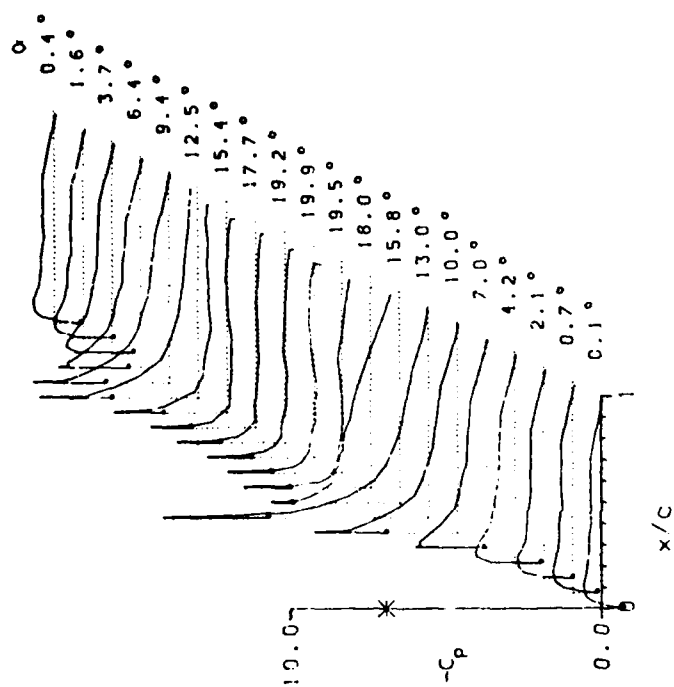
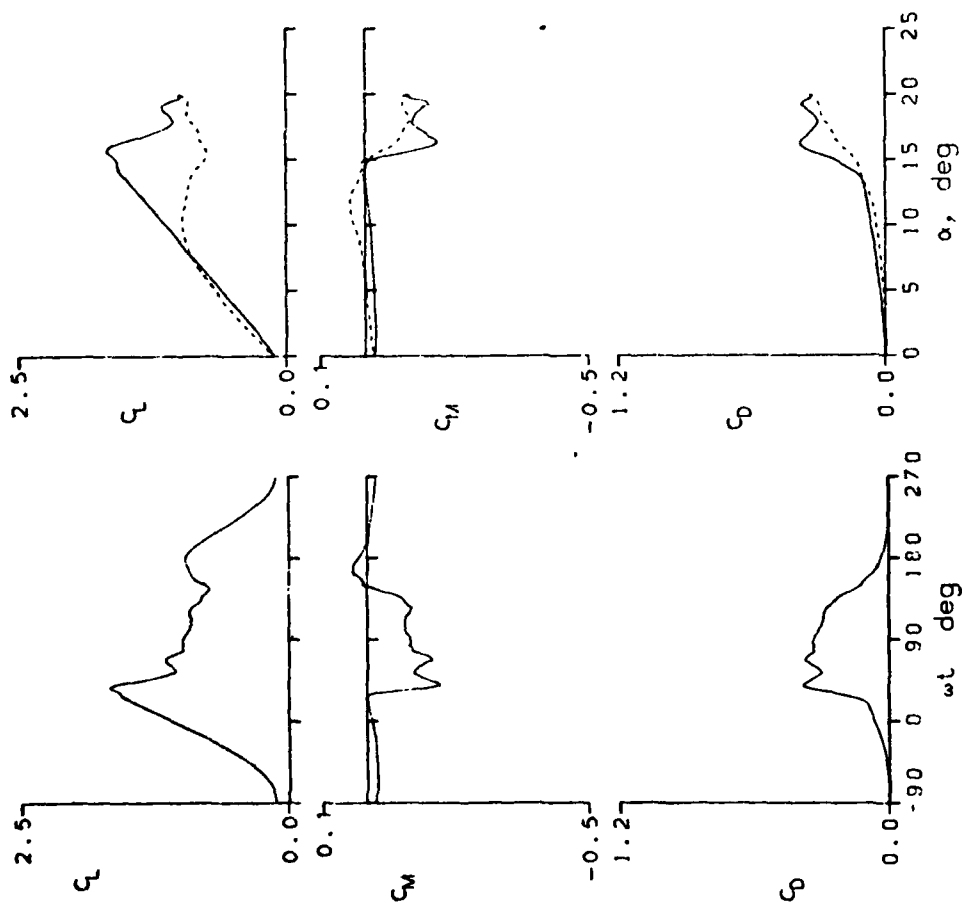


Figure 18.- Continued.

FRAME : 62400	A0 = 9.82 °	k = 0.097
R _g = 3.69 E6	A1 = 9.99 °	M = 0.302
C _{Lmax} = 1.95	C _{Mmin} = -0.26	C _{Dmax} = 0.55
α _{Lmax} = 17.7 °	ξ = 0.342	M _{max} = 1.178
α _{Cmin} = 9.3 °	-C _{Dmax} = 8.5	α _{Mmax} = 13.9 °

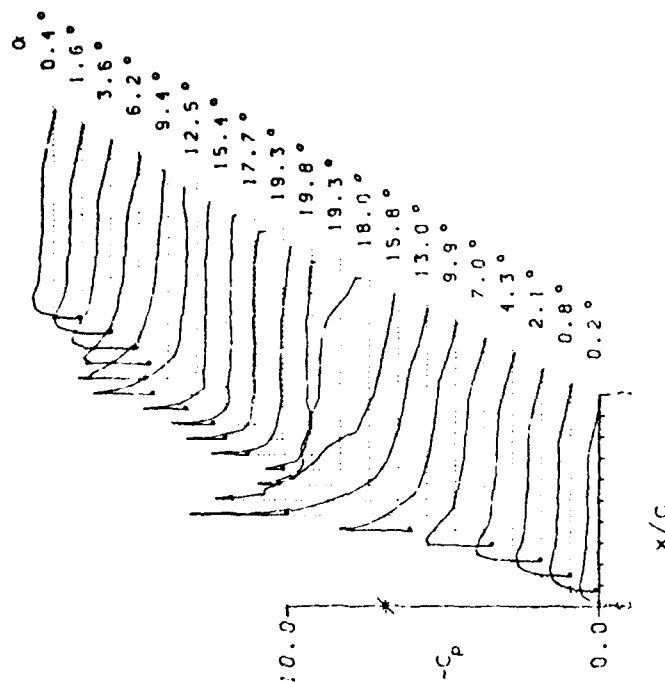
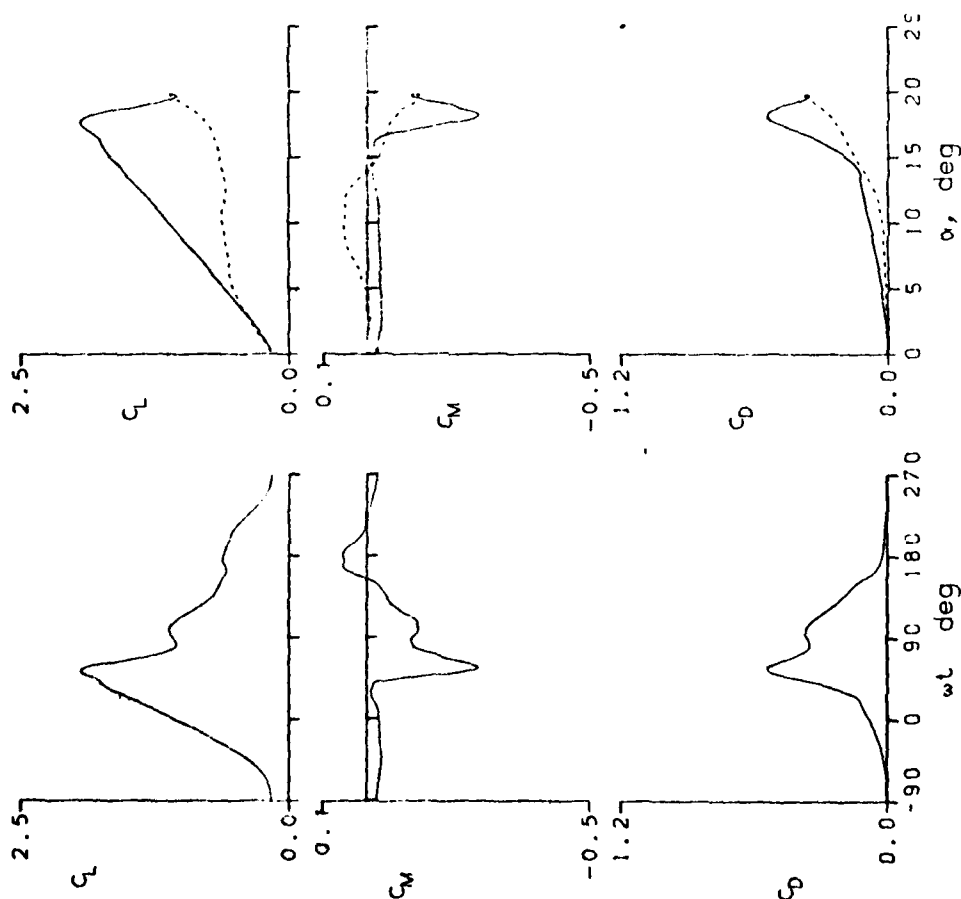


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 52403 $A_0 = 9.83^\circ$ $k = 0.116$
 $Re = 3.70 \times 10^6$ $A_1 = 9.91^\circ$ $M = 0.303$
 $C_{Lmax} = 2.02$ $C_{Mmin} = -0.30$ $C_{Dmax} = 0.62$
 $\alpha_{Lmax} = 18.5^\circ$ $\xi = 0.366$ $M_{max} = 1.184$
 $\alpha_{Cmin} = 9.5^\circ$ $-C_{Dmax} = 8.6$ $\alpha_{Mmax} = 14.5^\circ$

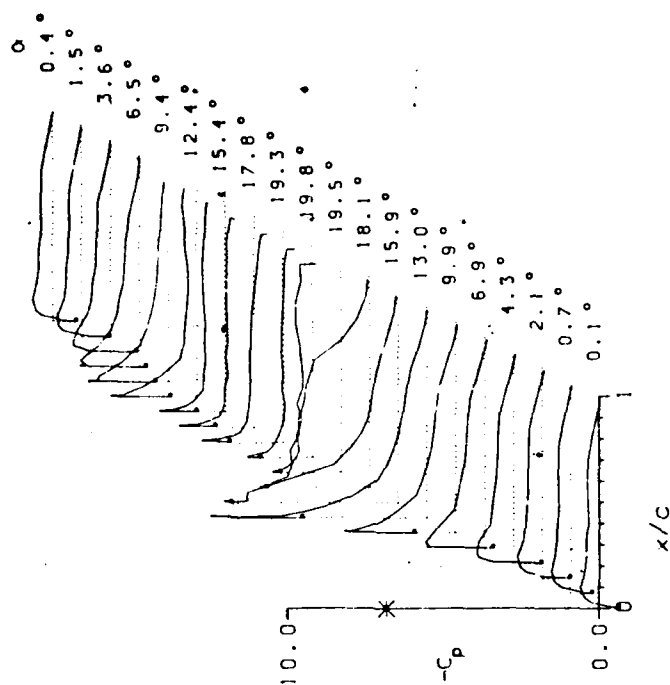
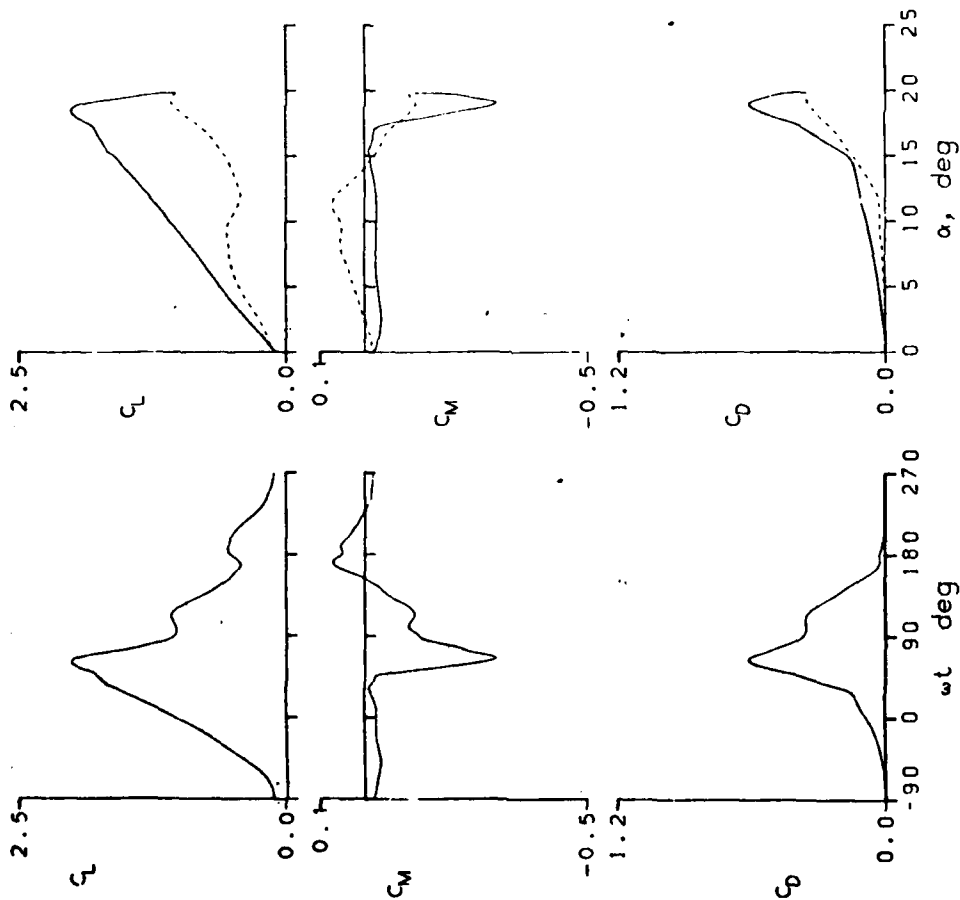


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 62405 $A_0 = 9.95^\circ$ $h = 0.145$
 $Re = 3.56 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.300$
 $C_{Lmax} = 1.99$ $C_{Mmin} = -0.29$ $C_{Dmax} = 0.62$
 $\alpha_{Lmax} = 18.9^\circ$ $\zeta = 0.353$ $M_{max} = 1.179$
 $\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 8.7$ $\alpha_{Mmax} = 14.7^\circ$

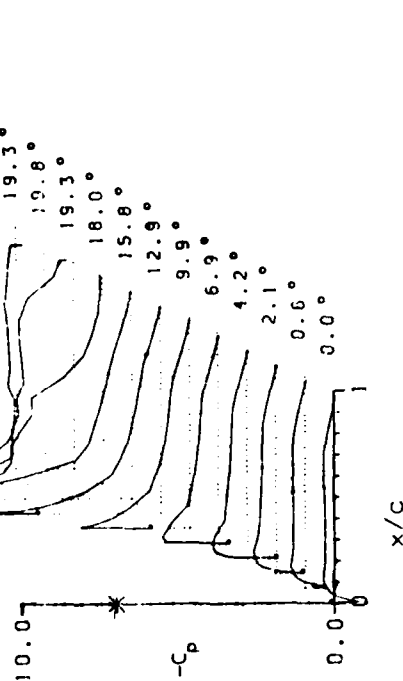
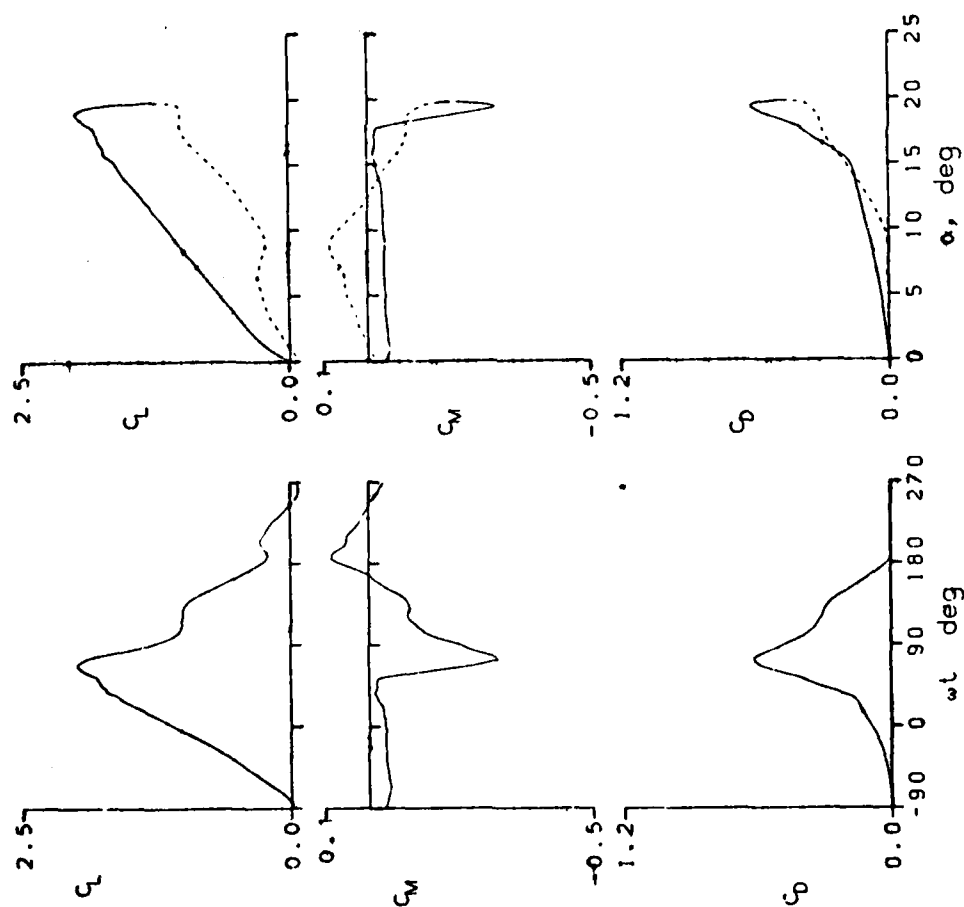


Figure 18.- Continued.

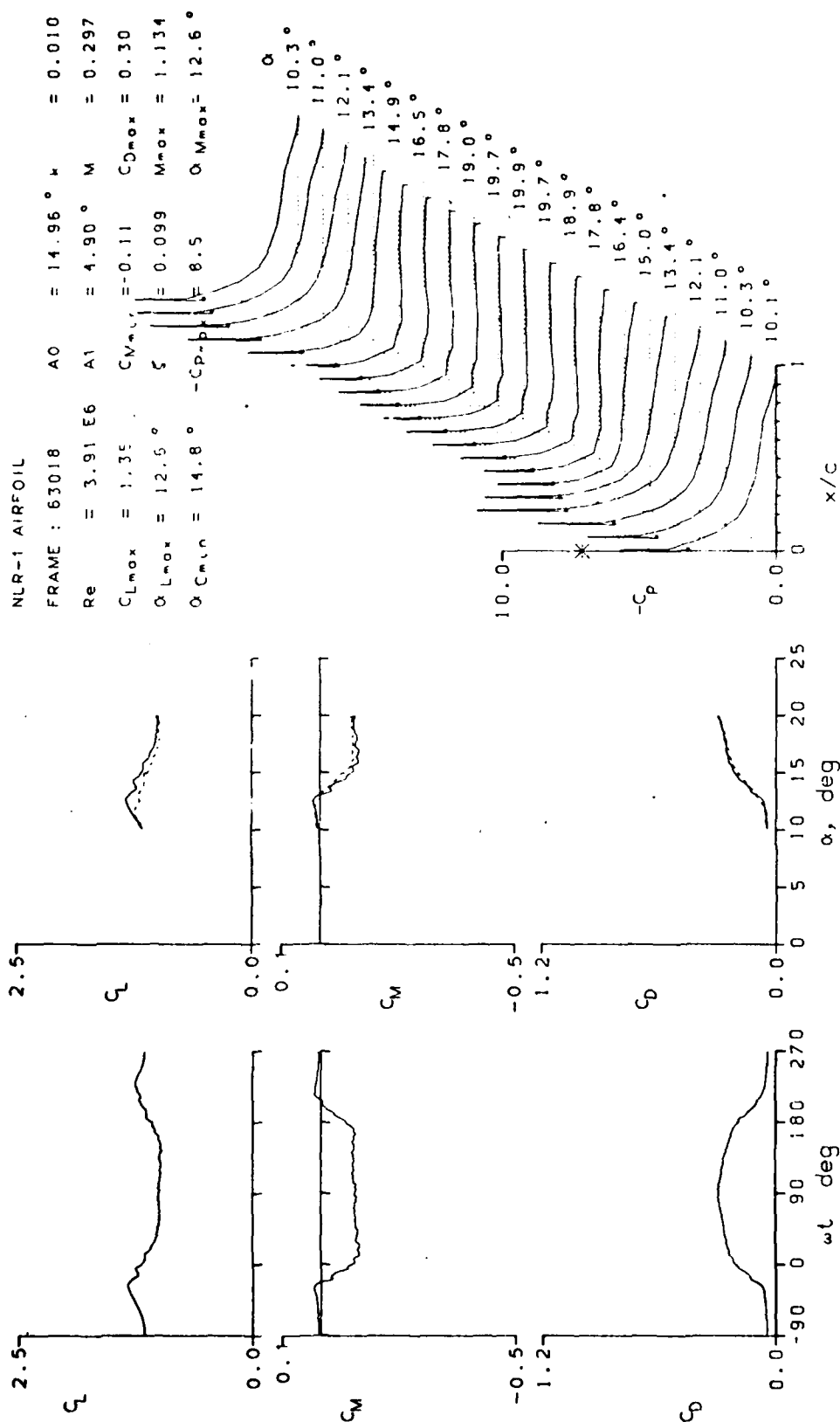


Figure 18.- Continued.

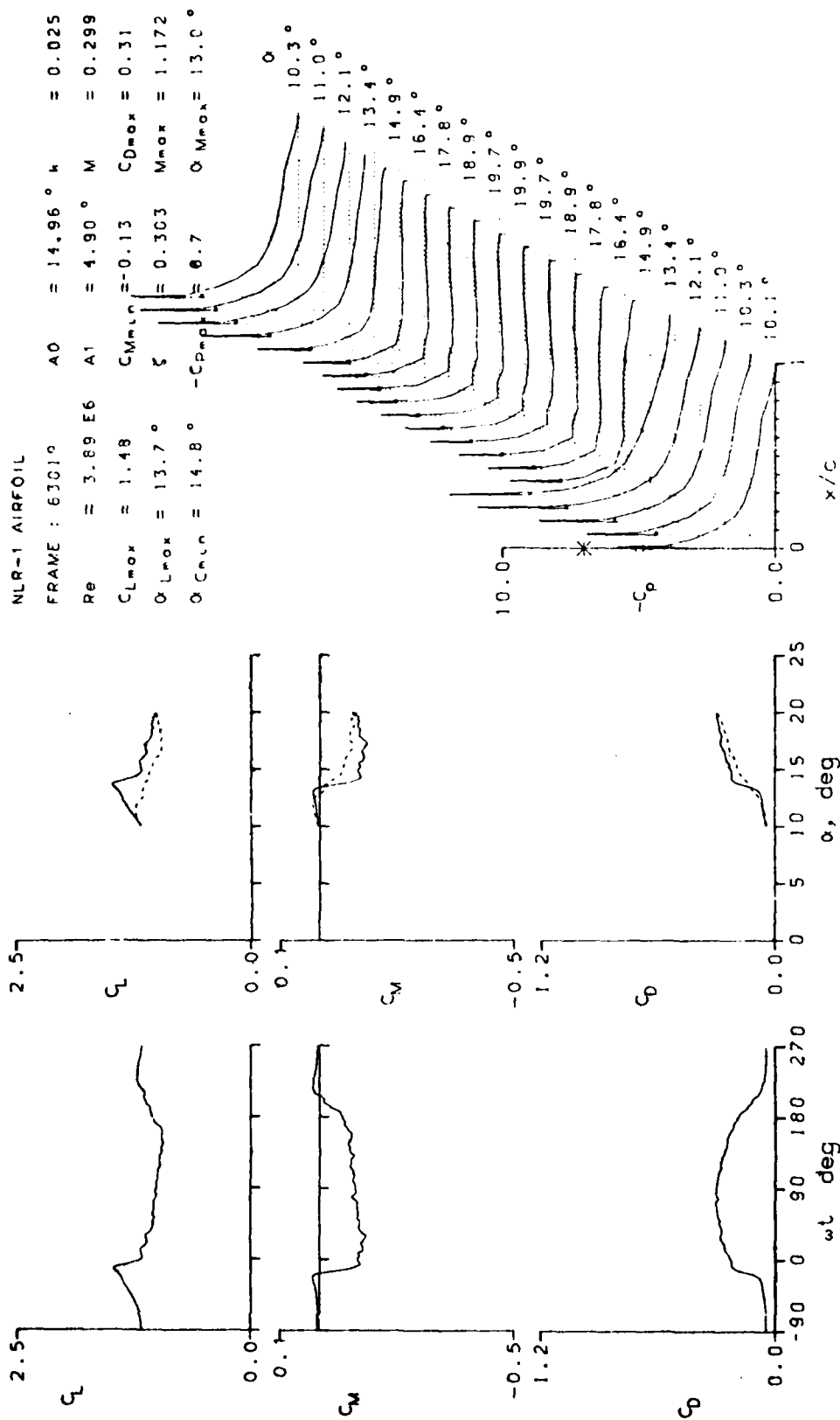


Figure 18.- Continued.

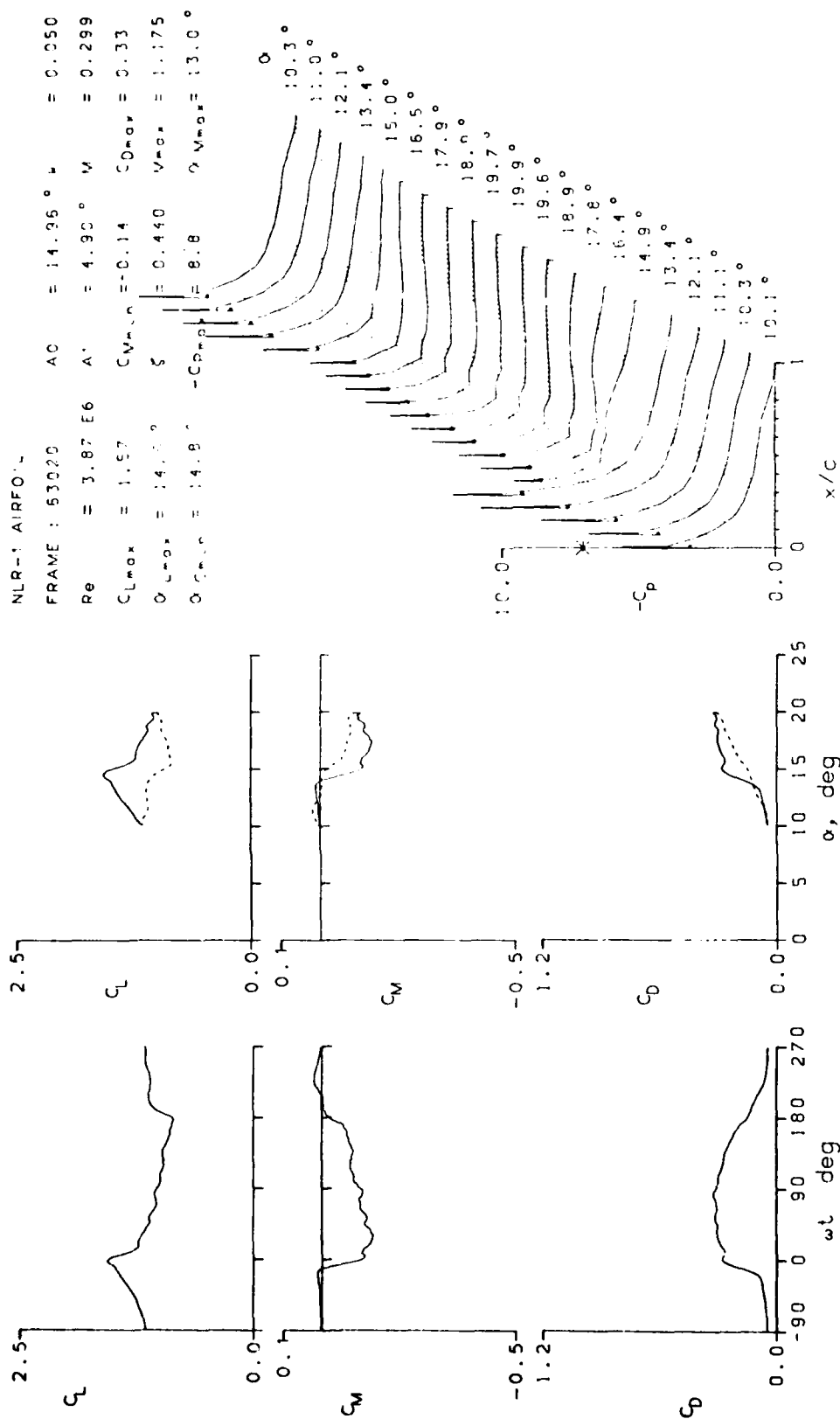


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 53021 $A_0 = 14.96^\circ$ $k = 0.100$
 $Re = 3.84 \text{ E}6$ $A_1 = 4.91^\circ$ $M = 0.297$
 $C_{Lmax} = 1.77$ $C_{VMmin} = -0.19$ $C_{Dmax} = 0.42$
 $\alpha_{Lmax} = 16.1^\circ$ $\zeta = 0.676$ $M_{max} = 1.179$
 $\alpha_{CMmin} = 14.8^\circ$ $-C_{Pmax} = 8.9$ $\alpha_{VMmax} = 13.4^\circ$

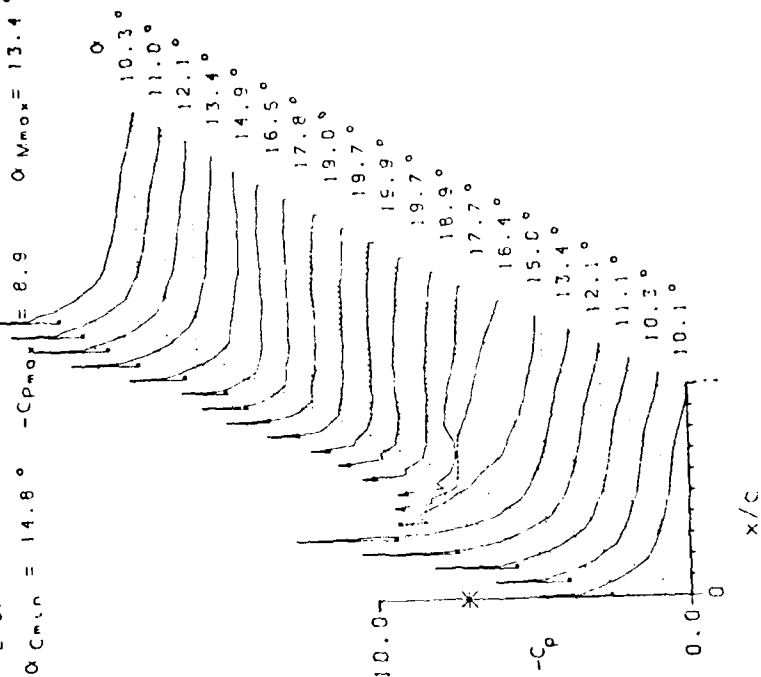
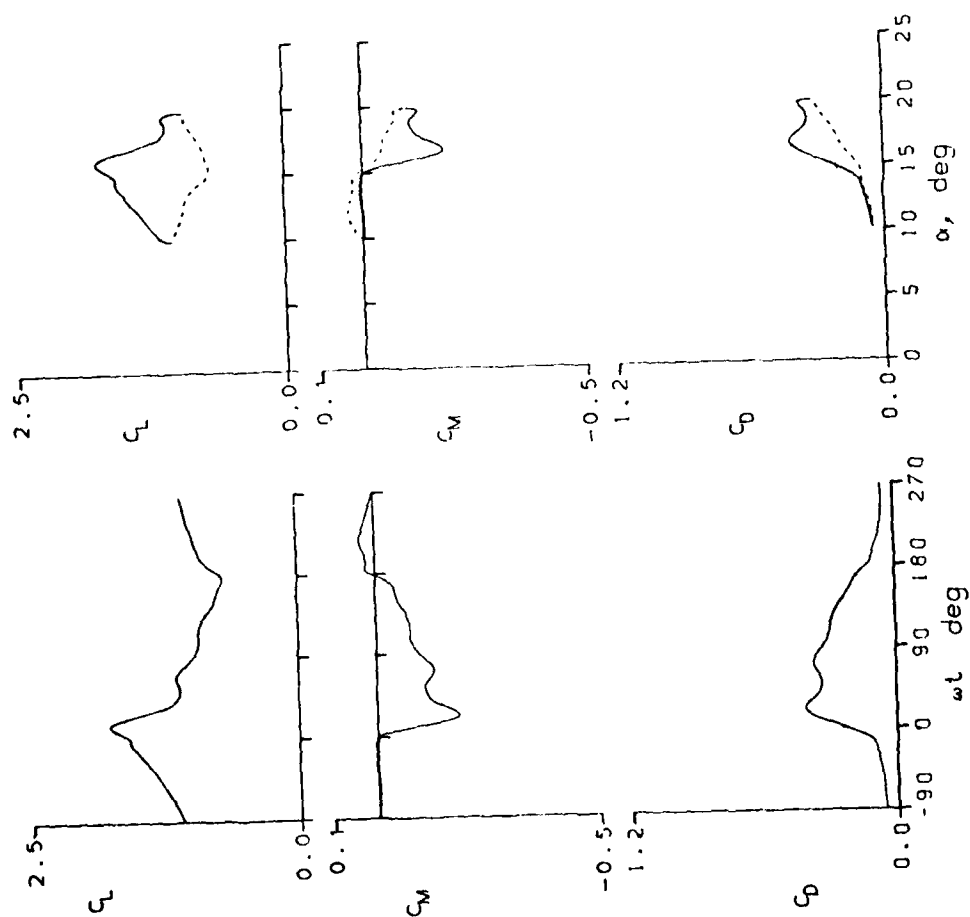


Figure 18.- Continued.

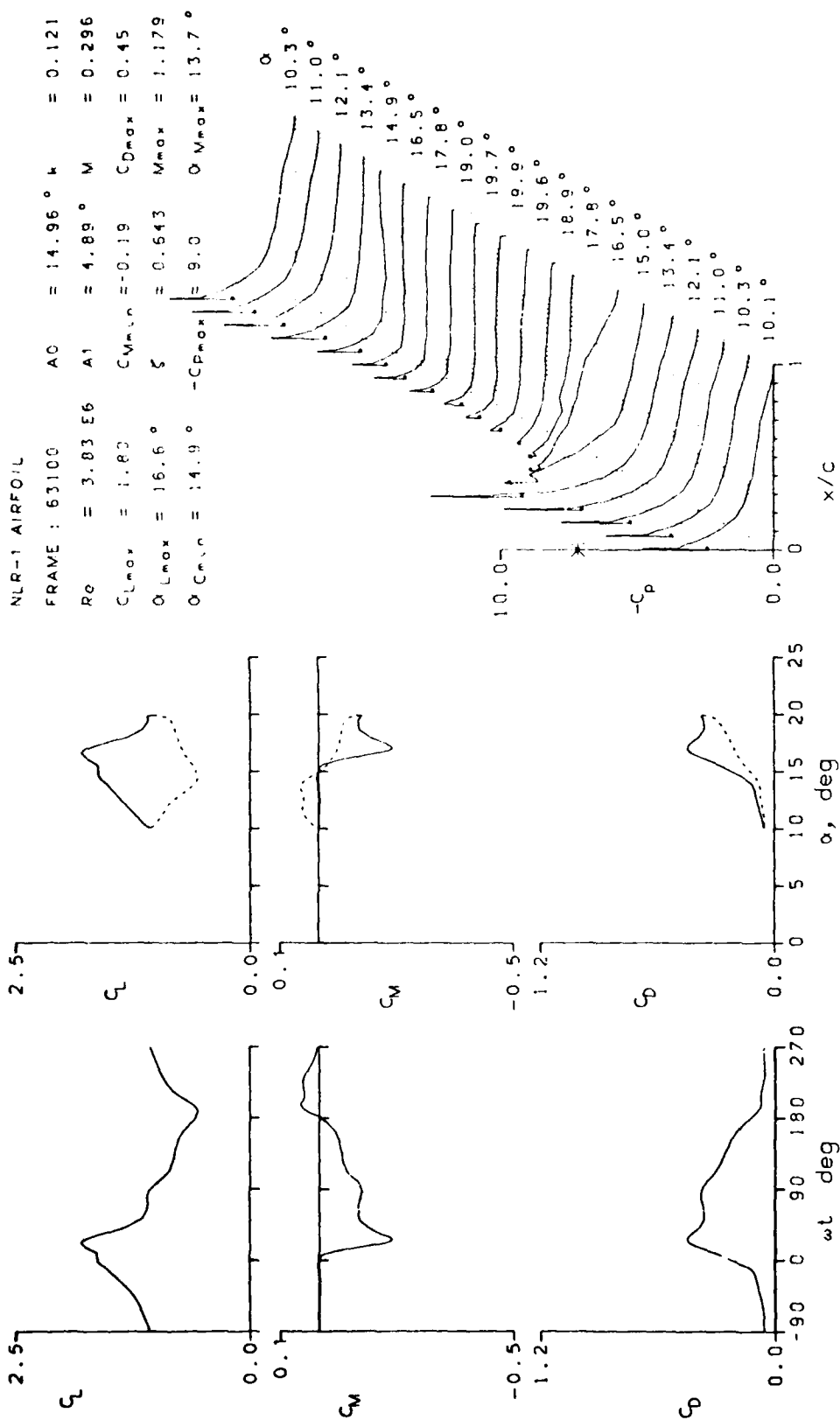


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 6310: $A_0 = 14.94^\circ$ $\mu = 0.151$
 $Re = 3.80 \times 10^6$ $A_1 = 4.91^\circ$ $M = 0.295$
 $C_{Lmax} = 1.88$ $C_{Mmin} = -0.23$ $C_{Dmax} = 0.51$
 $\alpha_{Lmax} = 17.3^\circ$ $\xi = 0.757$ $M_{max} = 1.180$
 $\alpha_{Cmin} = 14.9^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 13.8^\circ$

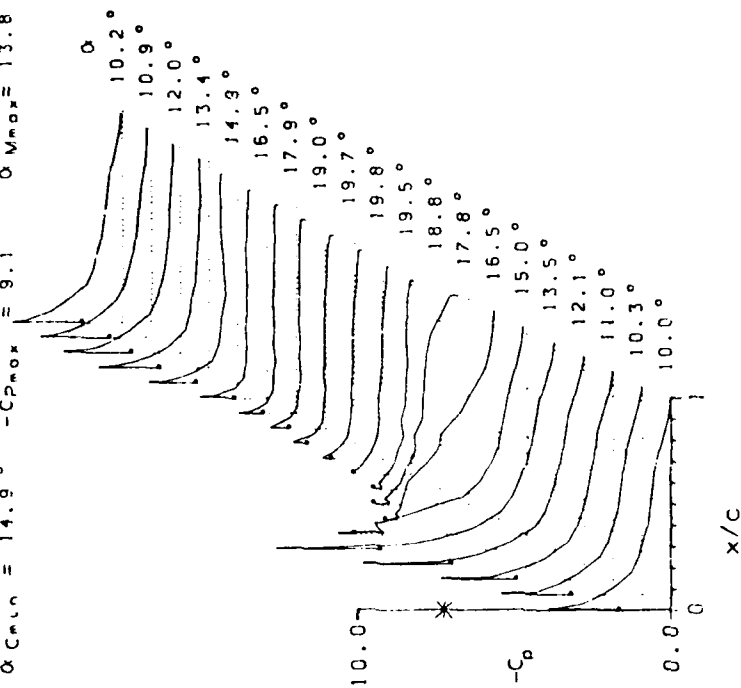
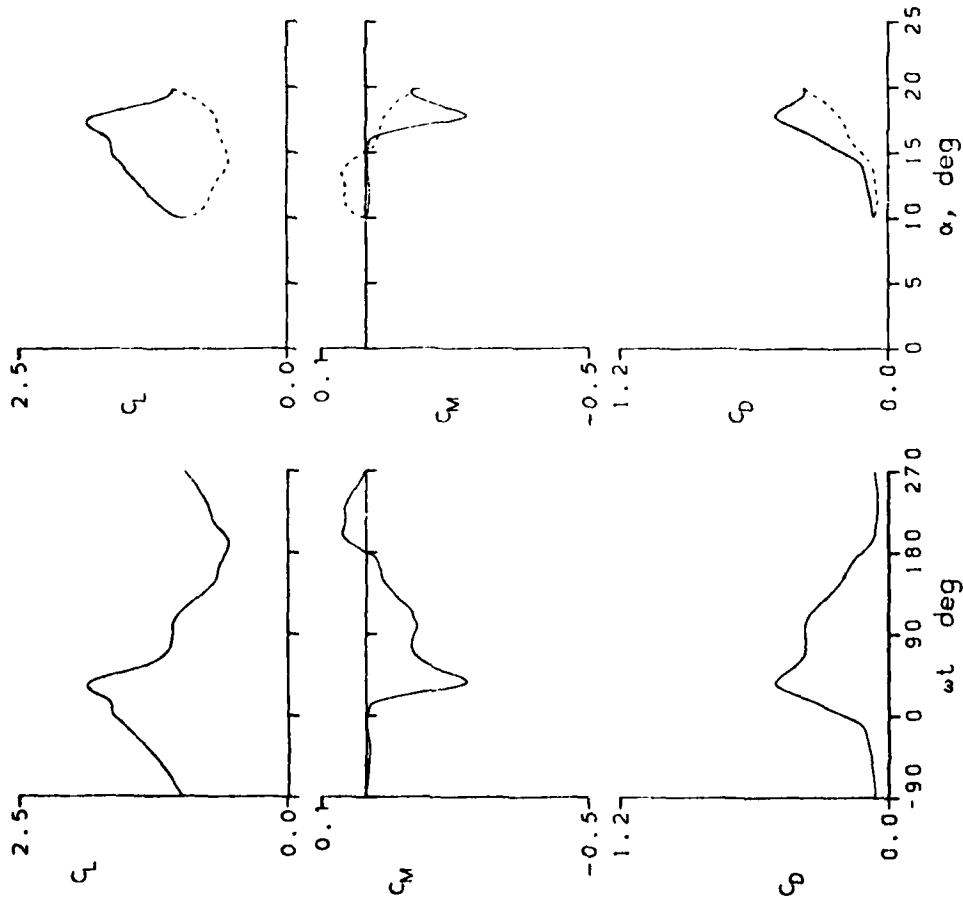
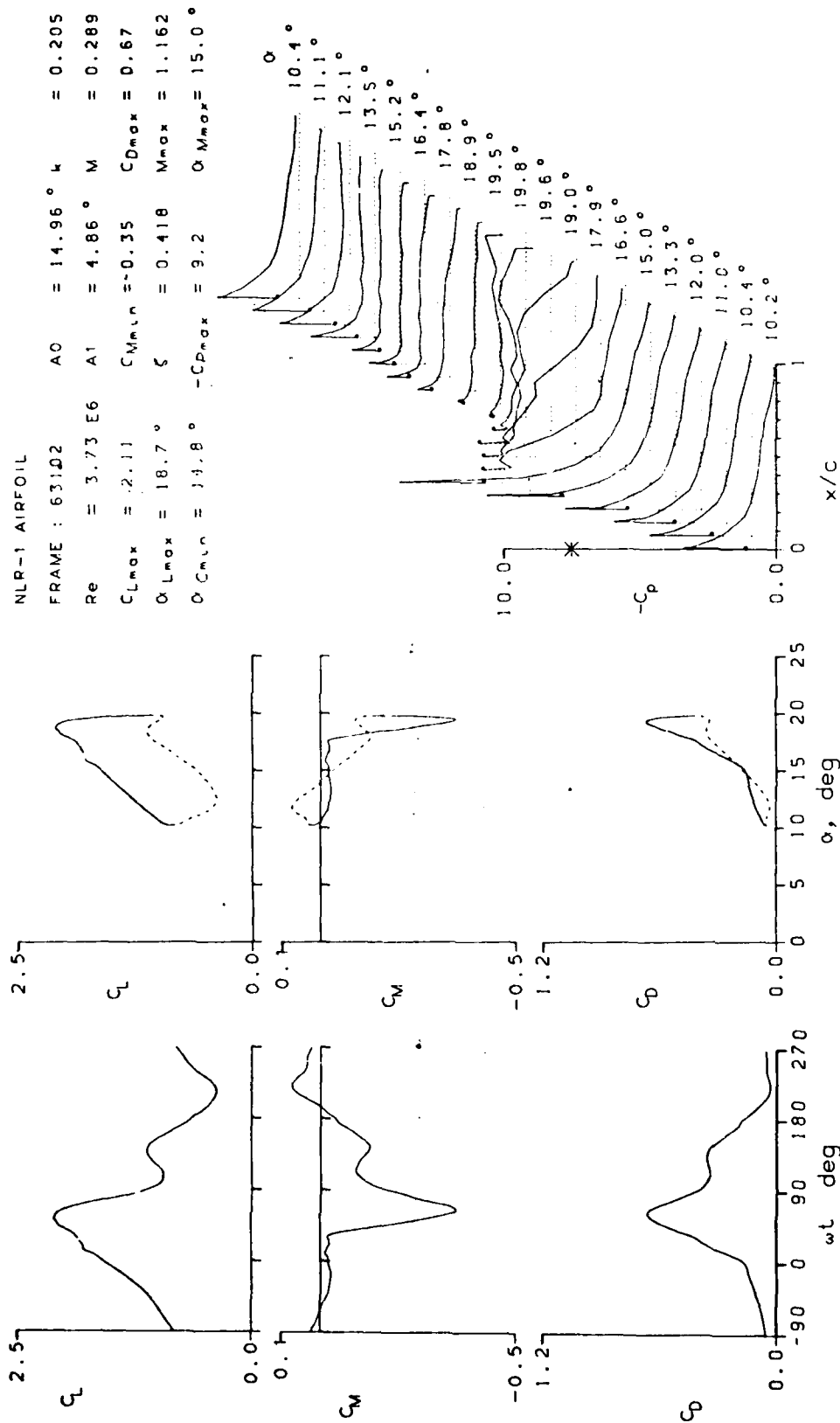


Figure 18.- Continued.



NLR-1 AIRFOIL
 FRAME : 63108 $A_0 = 9.97^\circ$ $k = 0.024$
 $Re = 3.60 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.303$
 $C_{Lmax} = 1.41$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.23$
 $\alpha_{Lmax} = 13.4^\circ$ $\zeta = 0.085$ $M_{max} = 1.168$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Dmax} = 8.5$ $\alpha_{Mmax} = 12.8^\circ$

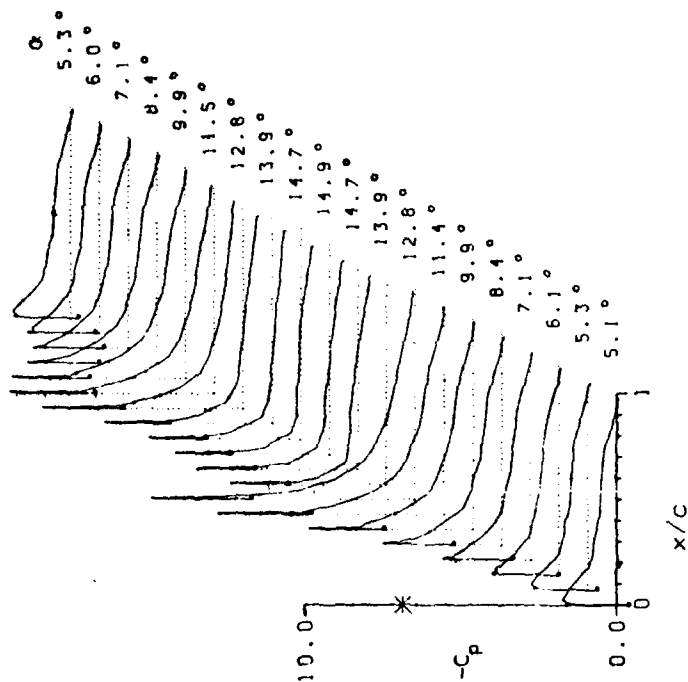
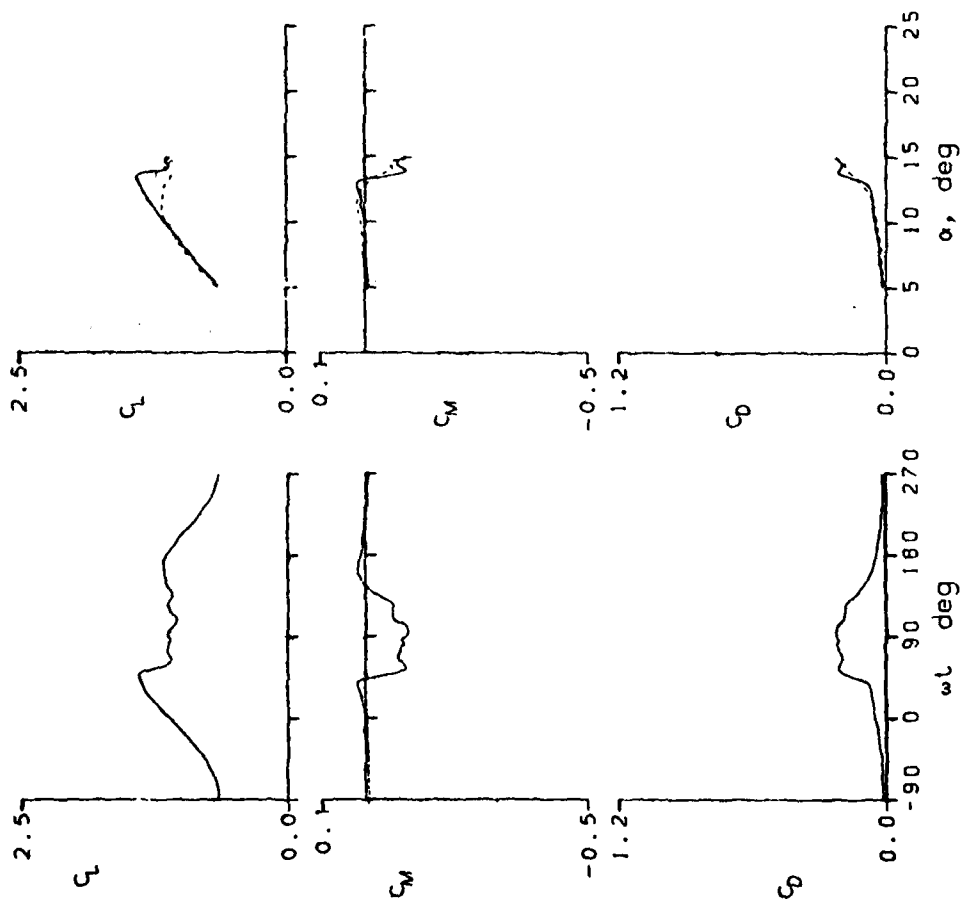


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 63112 $A_0 = 9.98^\circ$ $k = 0.098$
 $Re = 3.76 E6$ $A_1 = 4.90^\circ$ $M = 0.301$
 $C_{Lmax} = 1.60$ $C_{Mmin} = -0.13$ $C_{Dmax} = 0.30$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.163$ $M_{max} = 1.168$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Pmax} = 8.6$ $\alpha_{Mmax} = 13.1^\circ$

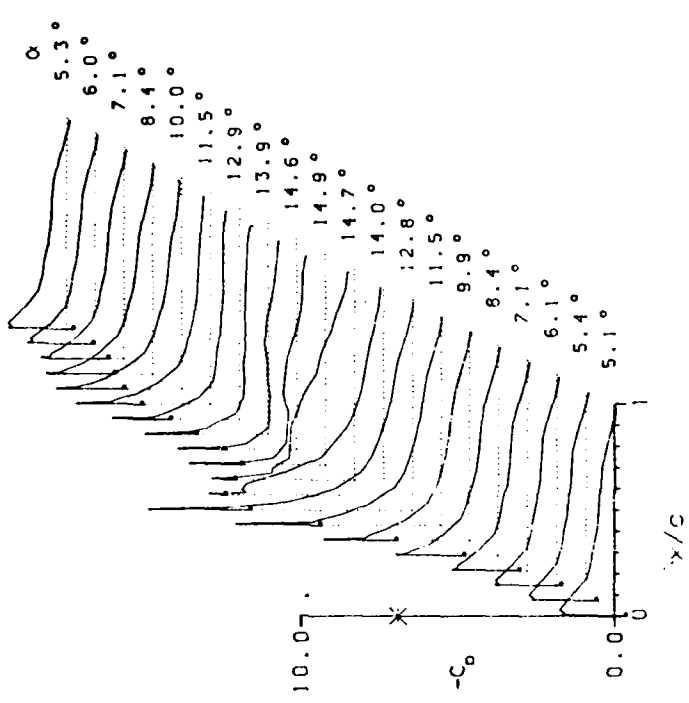
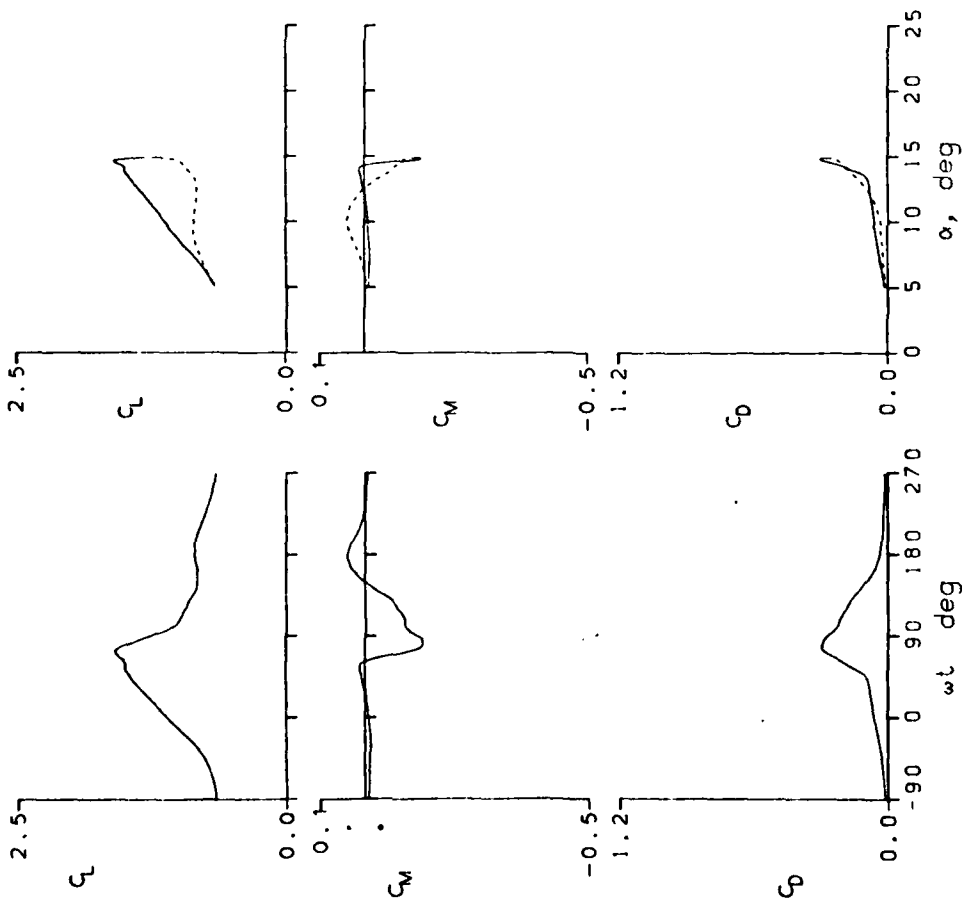


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 63114 $A_0 = 9.90^\circ$ $k = 0.195$
 $Re = 3.75 \text{ E}6$ $A_1 = 4.91^\circ$ $M = 0.302$
 $C_{Lmax} = 1.76$ $C_{Mmin} = -0.22$ $C_{Dmax} = 0.38$
 $\alpha_{Lmax} = 14.9^\circ$ $\xi = 0.264$ $M_{max} = 1.172$
 $\alpha_{Cmin} = 9.7^\circ$ $-C_{Dmax} = 8.6$ $\alpha_{Mmax} = 13.3^\circ$

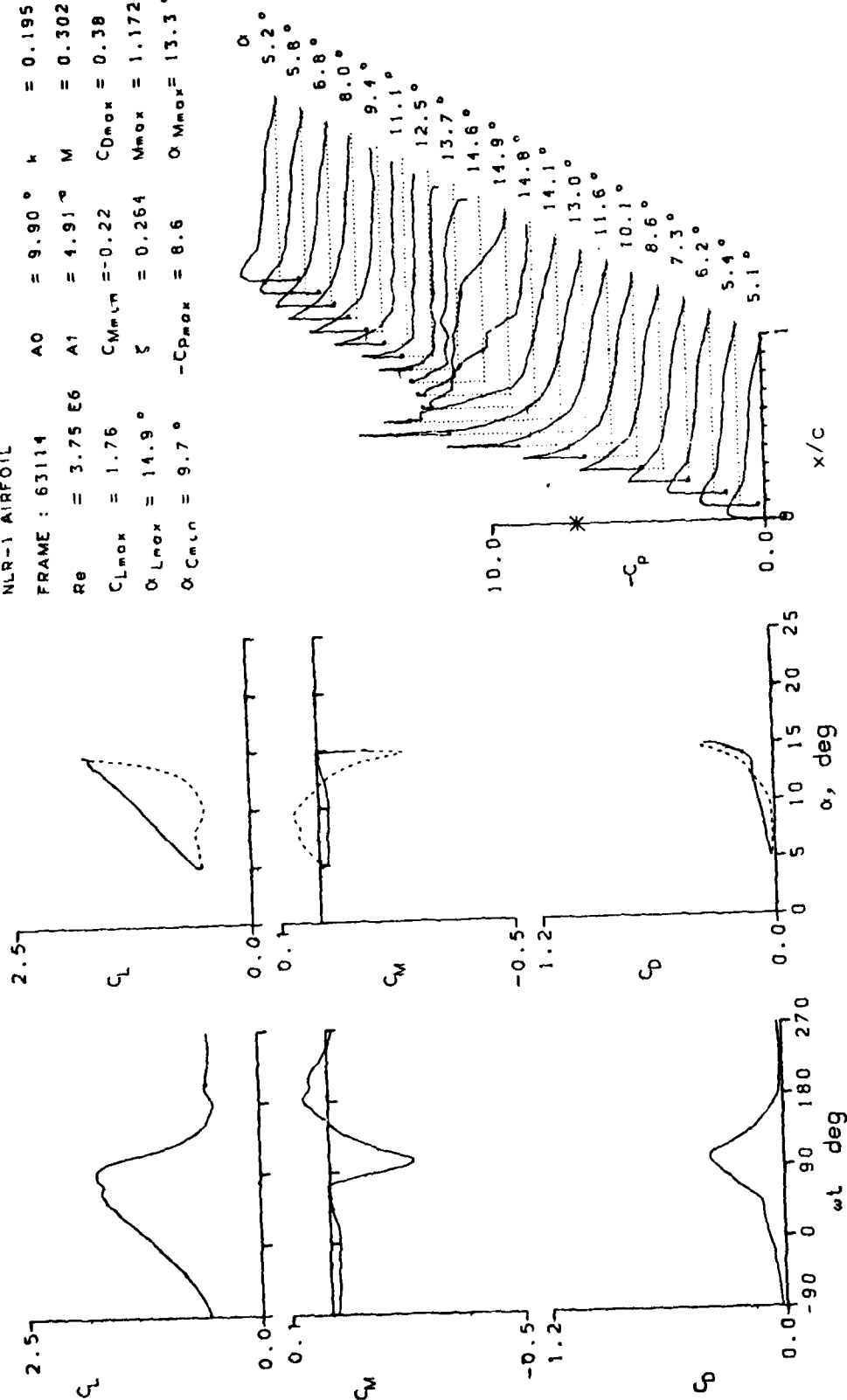


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 63122 $A_0 = 11.91^\circ$ $k = 0.117$
 $Re = 3.74 \text{ E}6$ $A_1 = 7.90^\circ$ $M = 0.300$
 $C_{Lmax} = 1.90$ $C_{Mmin} = -0.30$ $C_{Dmax} = 0.59$
 $\alpha_{Lmax} = 18.1^\circ$ $\zeta = 0.445$ $M_{max} = 1.159$
 $\alpha_{Cmin} = 11.5^\circ$ $-C_{Dmax} = 8.5$ $\alpha_{Mmax} = 14.2^\circ$

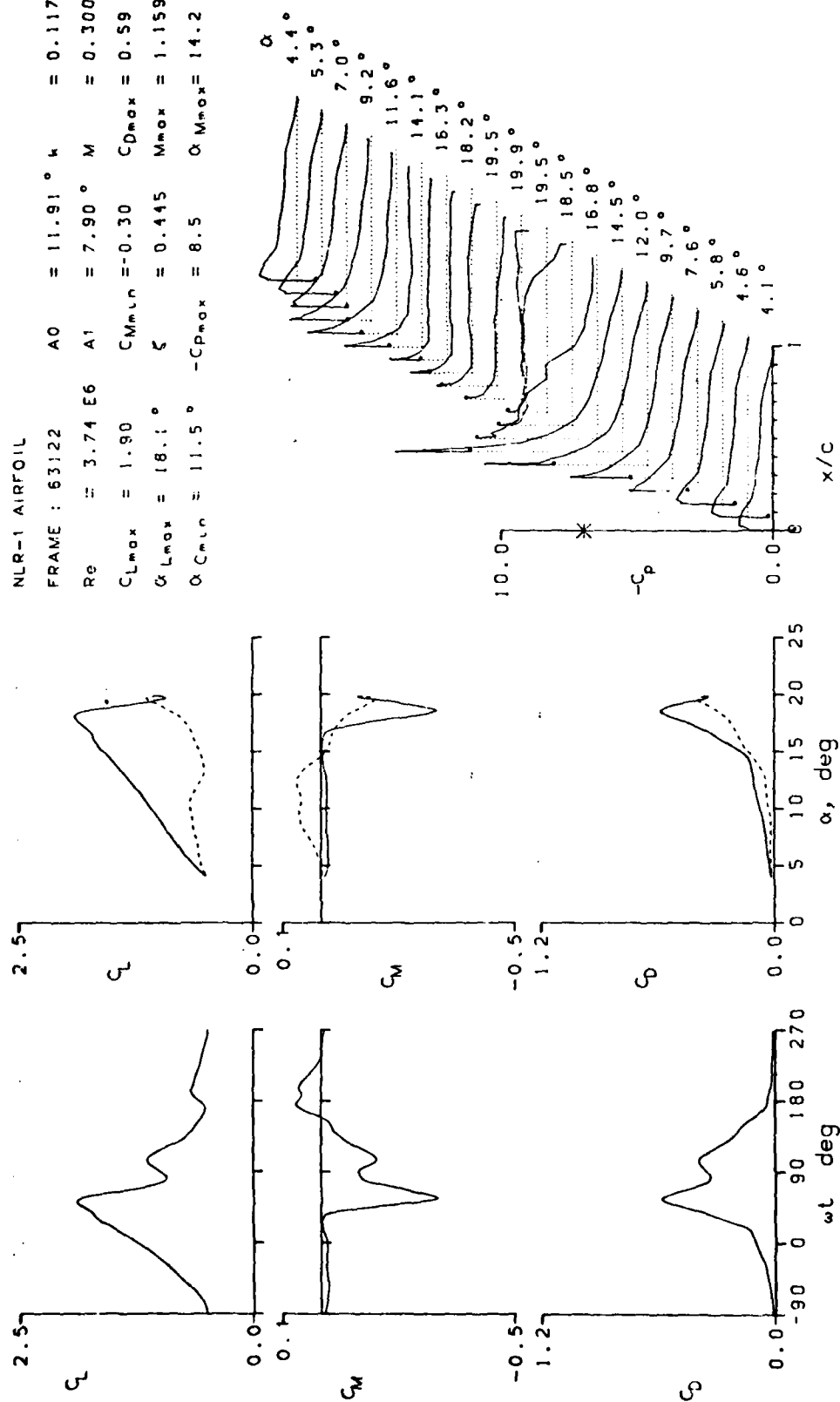


Figure 18.- Continued.

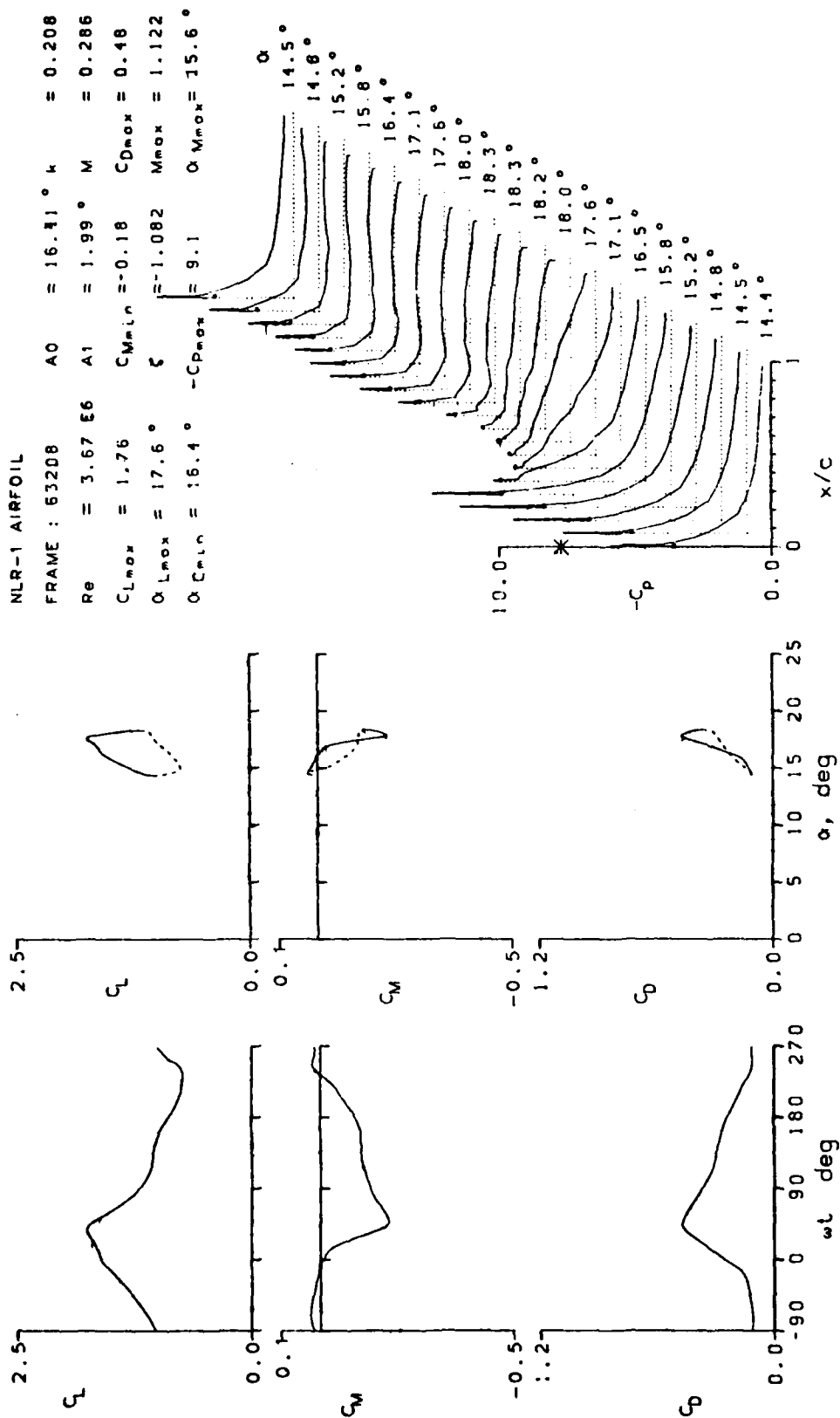


Figure 18.- Continued.

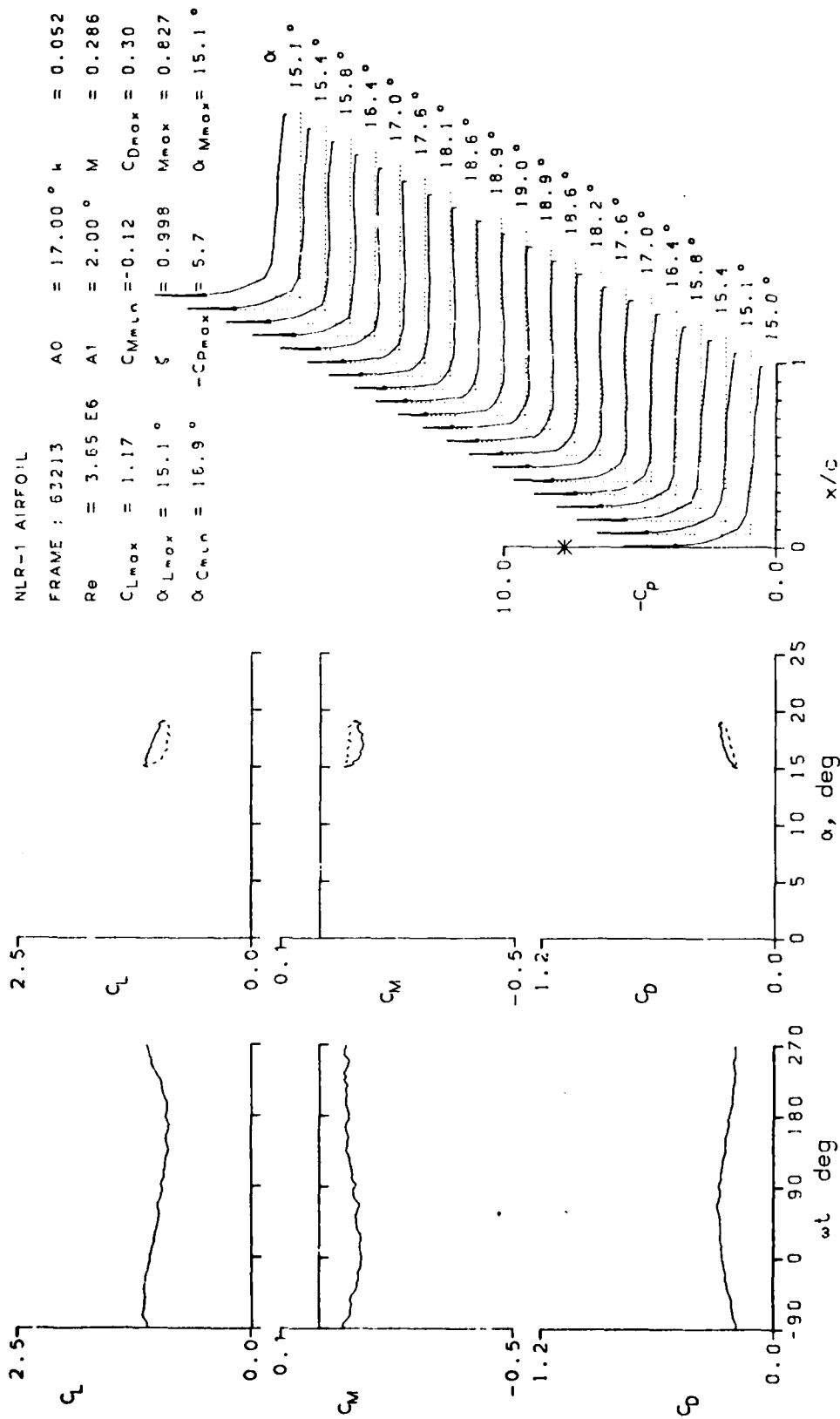


Figure 18.- Continued.

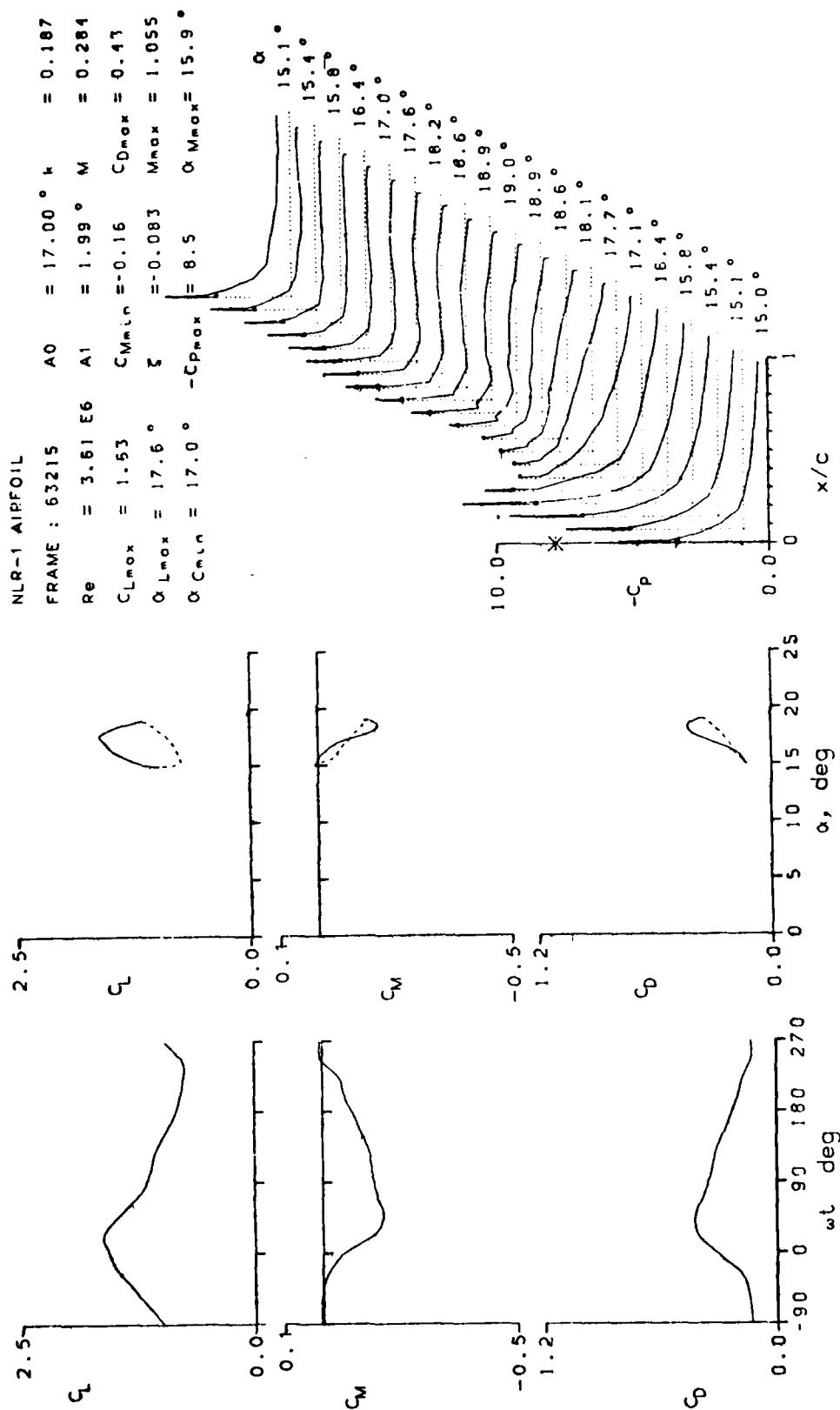


Figure 18.- Continued.

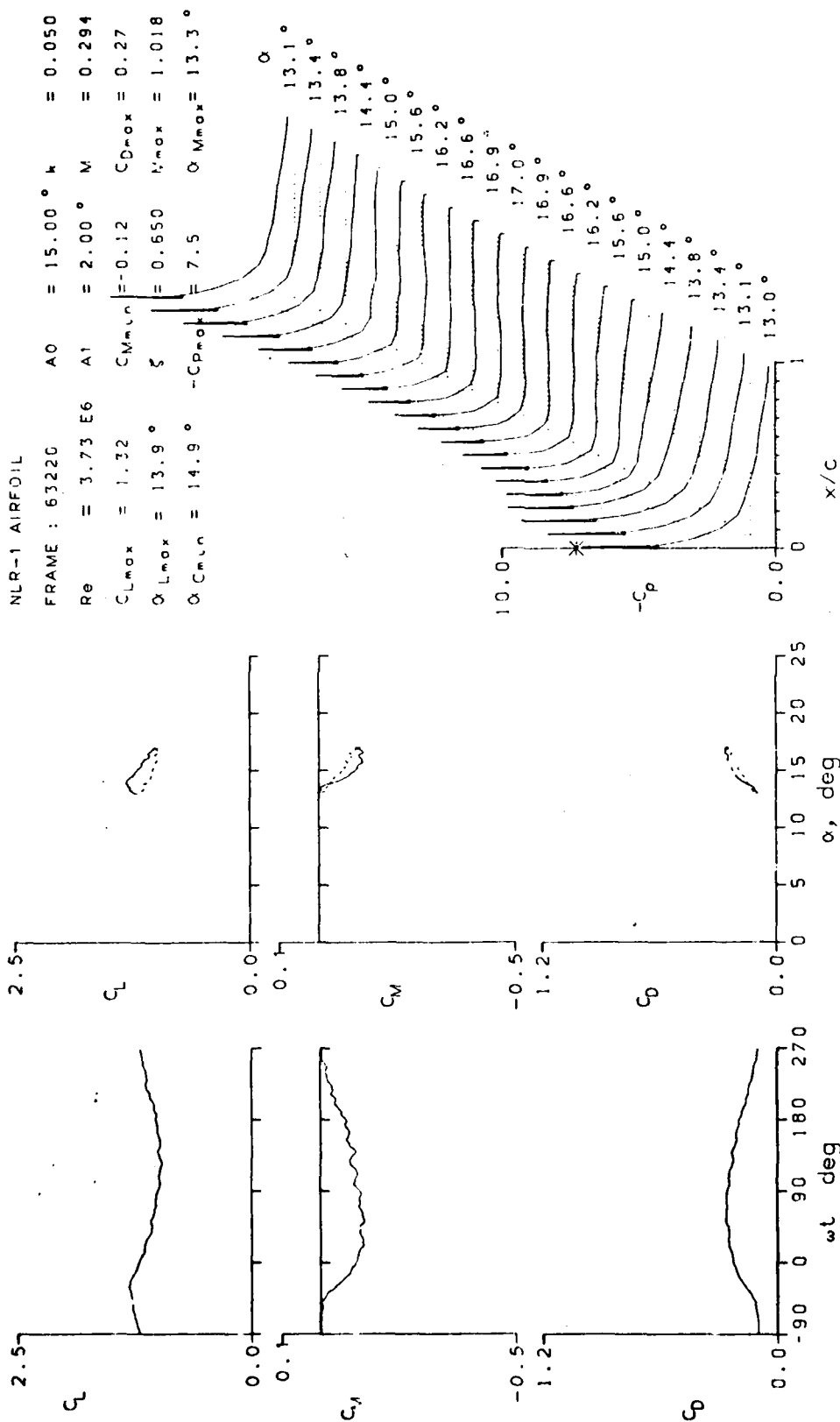


Figure 18.- Continued.

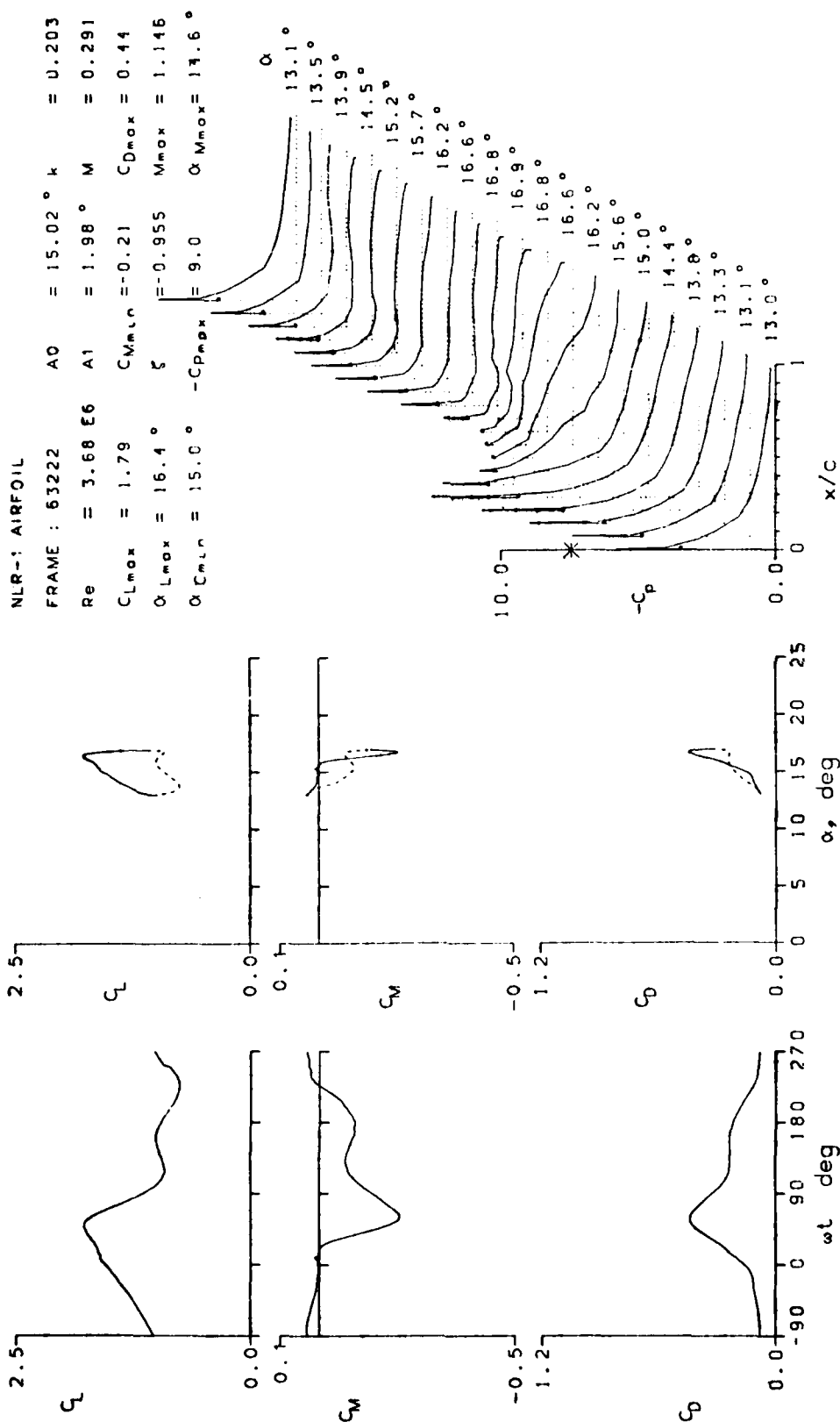


Figure 18.- Continued.

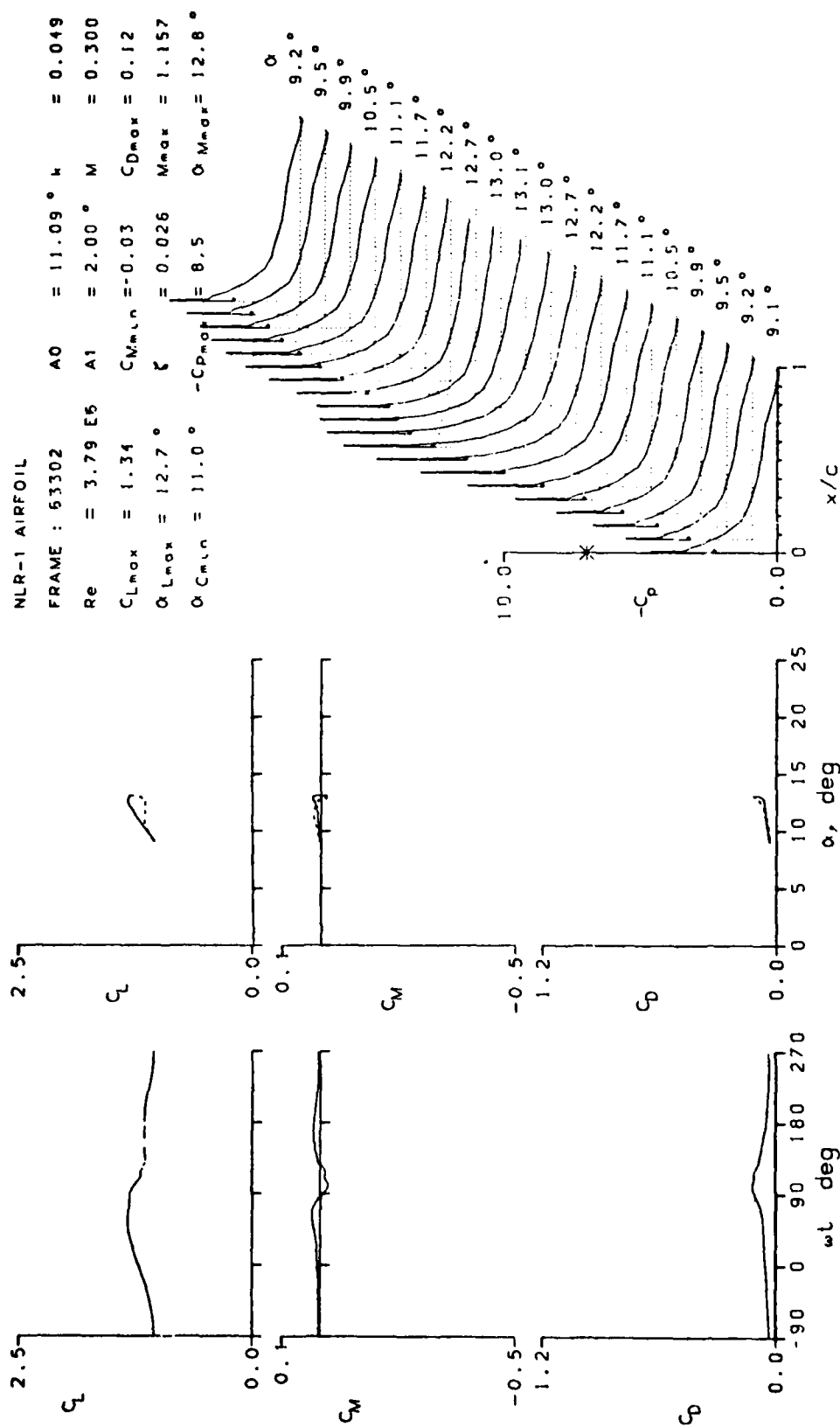


Figure 18.- Continued.

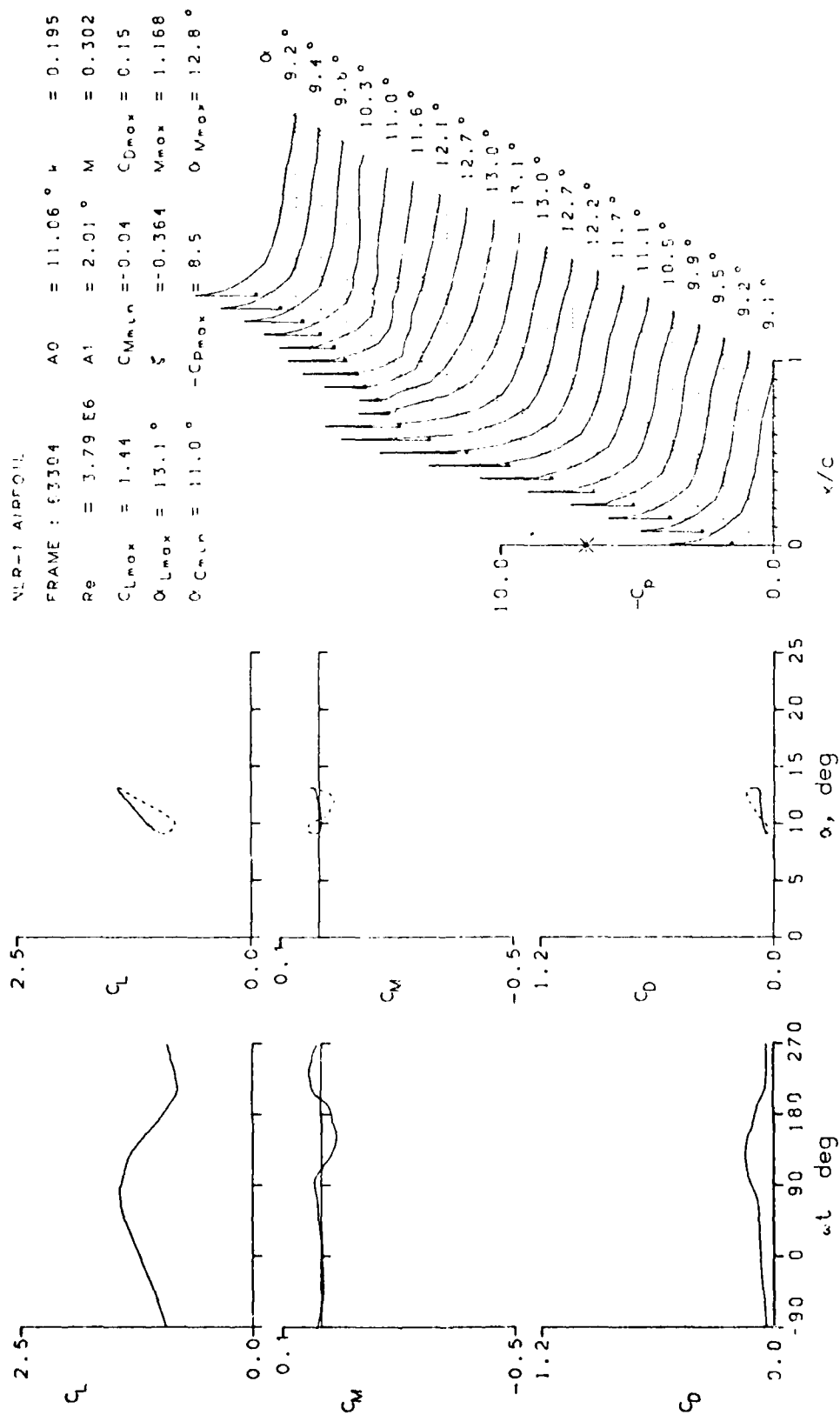


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 65312 $\alpha_0 = 2.35^\circ$ $h = 0.010$
 $Re = 3.76 \text{ E}6$ $A1 = 10.14^\circ$ $M = 0.302$
 $C_{Lmax} = 1.29$ $C_{Mmax} = -0.05$ $C_{Dmax} = 0.09$
 $\alpha_{Lmax} = 12.3^\circ$ $\zeta = 0.035$ $M_{max} = 1.116$
 $\alpha_{Cmax} = 2.0^\circ$ $-C_{Dmax} = 8.0$ $\alpha_{Mmax} = 12.3^\circ$

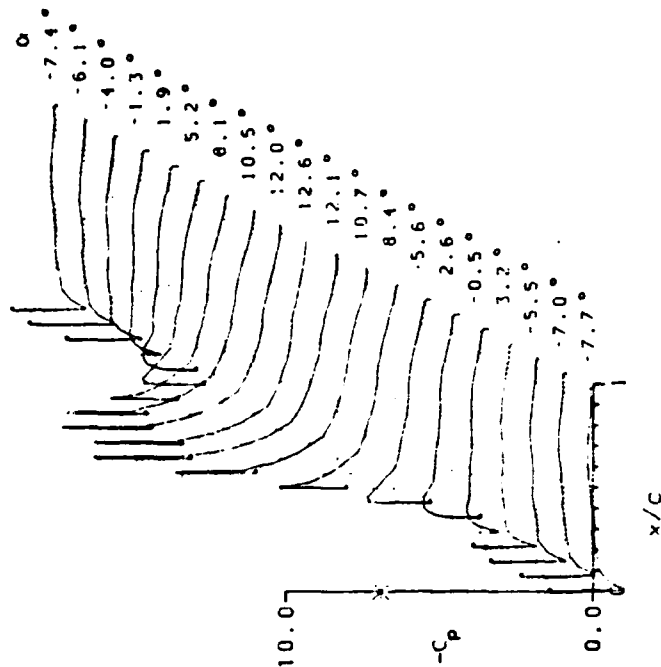
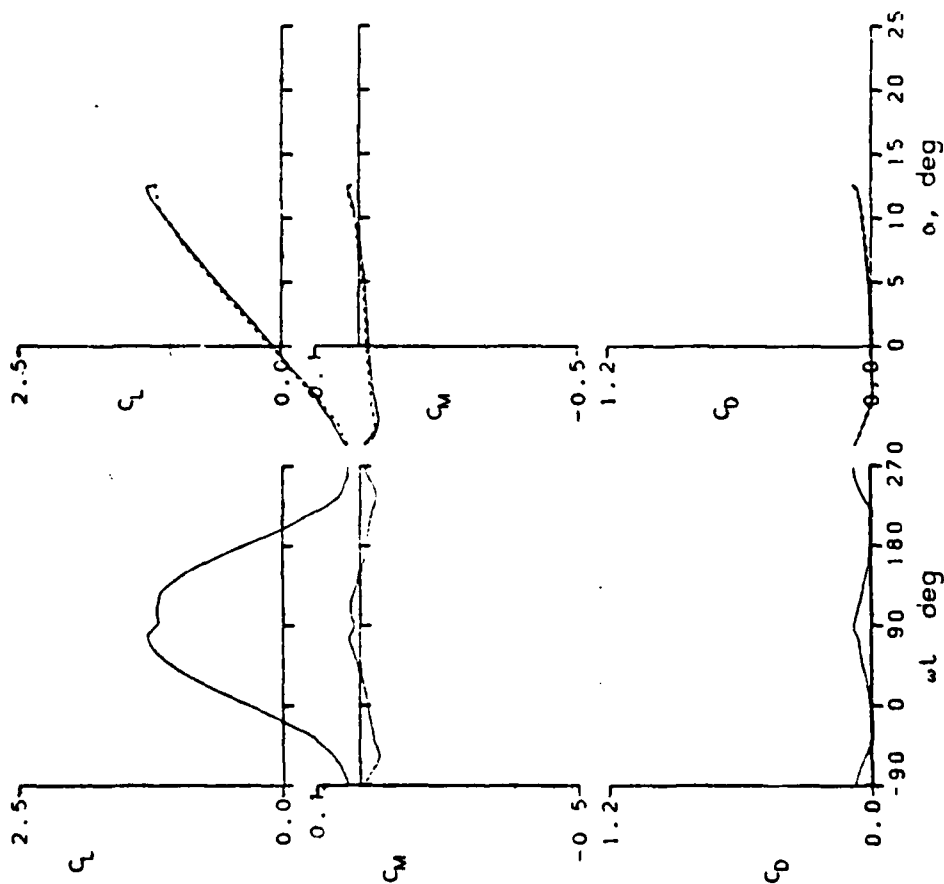


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 63314	A0 = 2.35°	h = 0.024
Re = 3.74 E6	A1 = 10.15°	M = 0.302
CLmax = 1.32	CMmin = -0.05	CDmax = 0.09
OLmax = 12.4°	ξ = 0.077	Mmax = 1.143
OLCMIN = 1.9°	-CDmax = 0.3	OLMmax = 12.5°

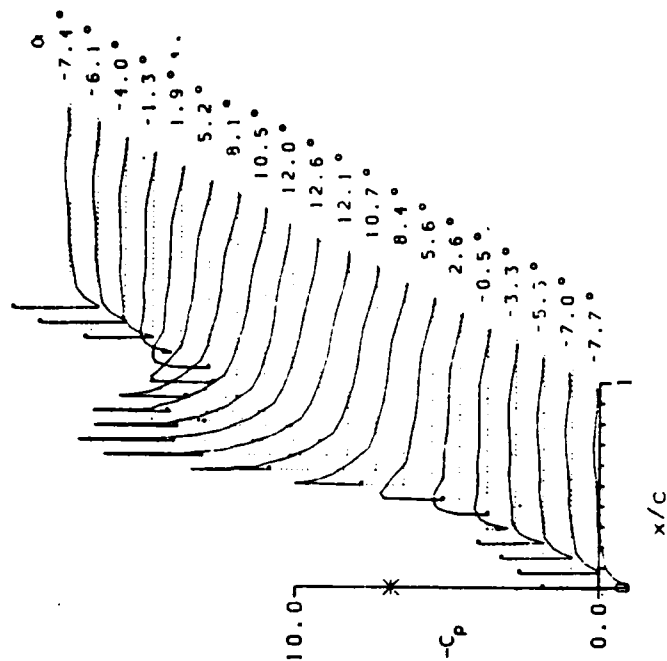
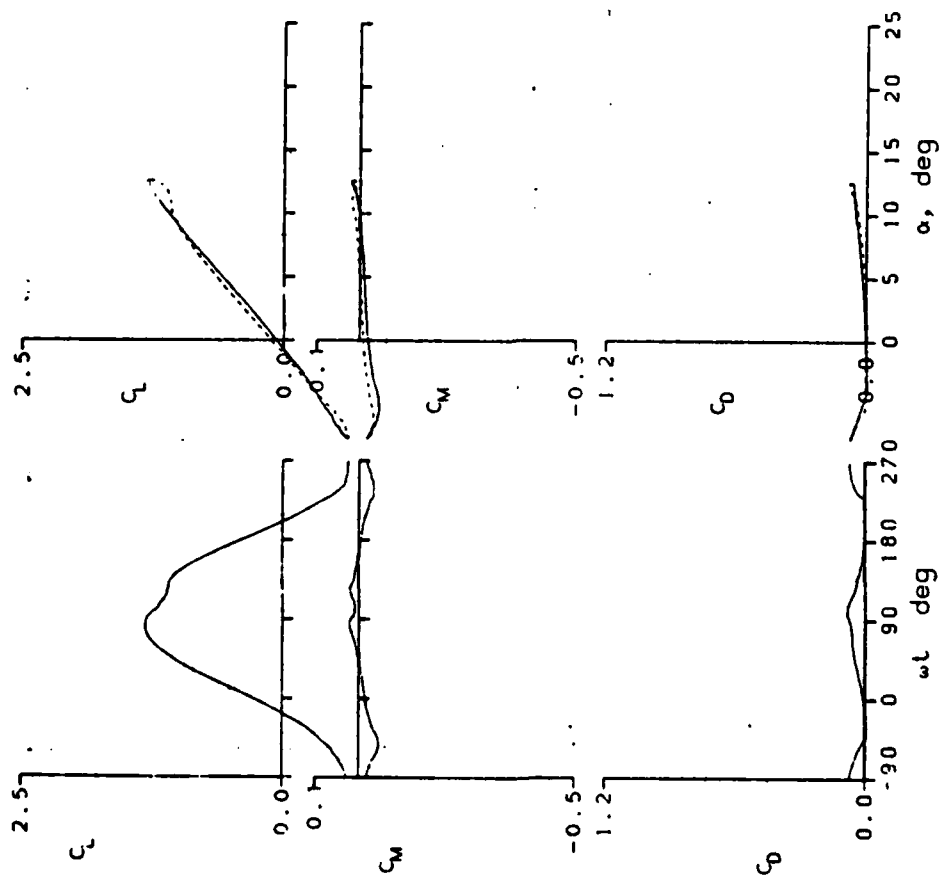


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 63318	$A_0 = 2.35^\circ$	$\mu = 0.049$
$Re = 3.76 E6$	$A_1 = 10.15^\circ$	$M = 0.303$
$C_{Lmax} = 1.34$	$C_{Mmin} = -0.06$	$C_{Dmax} = 0.09$
$\alpha_{Lmax} = 12.4^\circ$	$\zeta = 0.148$	$M_{max} = 1.151$
$\alpha_{Cmin} = 1.9^\circ$	$-C_{Dmax} = 8.3$	$\alpha_{Mmax} = 12.6^\circ$

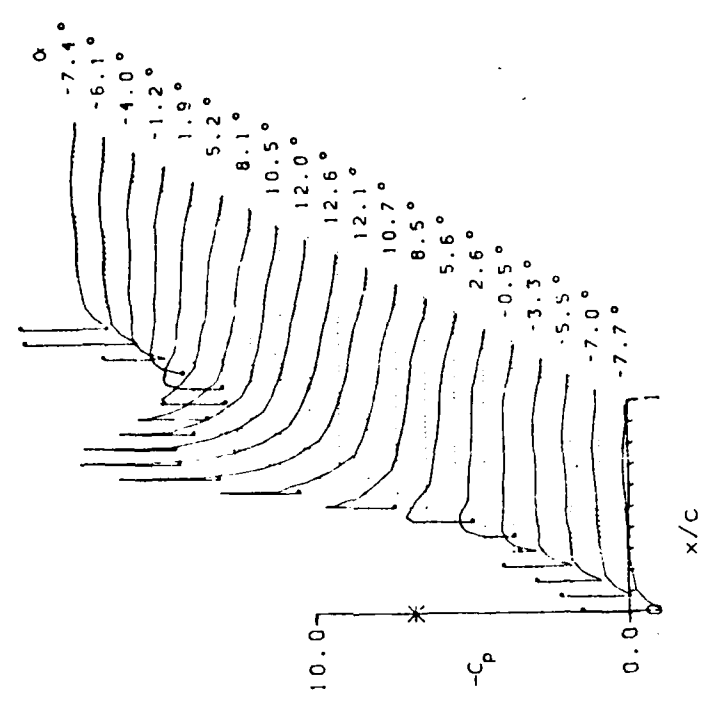
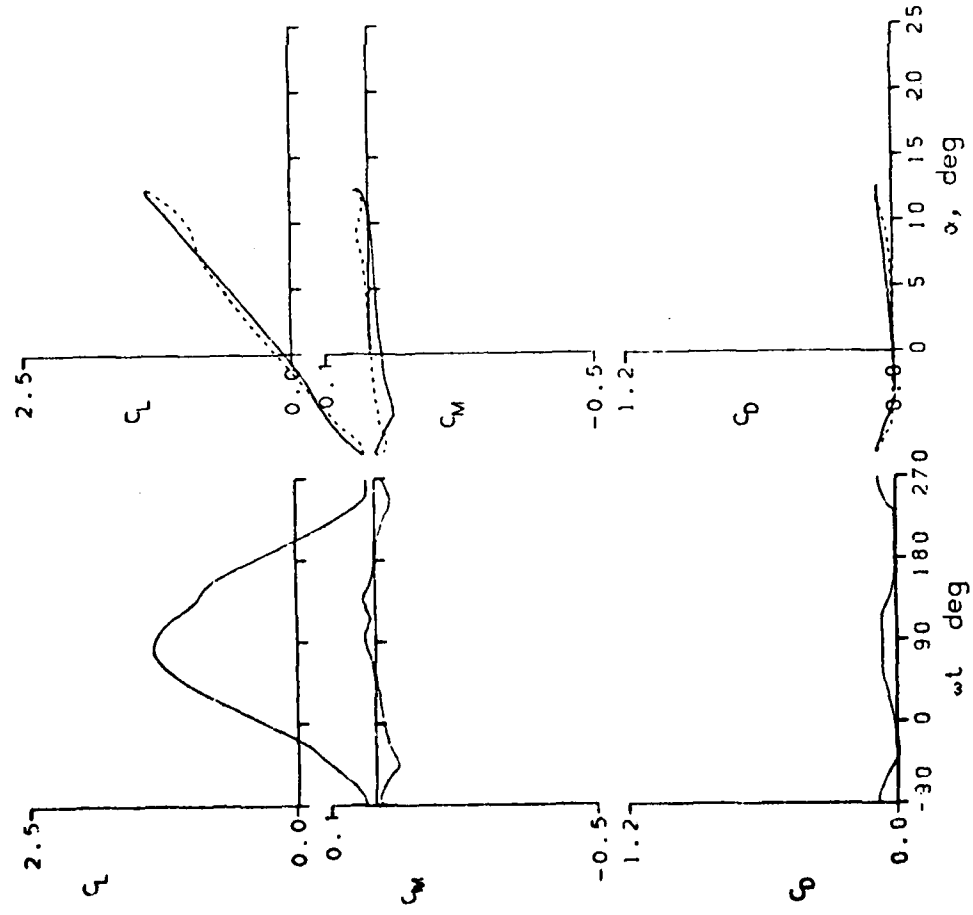


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 63320	A0 = 2.34°	h = 0.097
Re = 3.74 E6	A1 = 10.15°	M = 0.303
CLmax = 1.36	CMmin = -0.07	CDmax = 0.08
OLmax = 12.6°	ξ = 0.317	Mmax = 1.153
OCmin = 0.1°	-CDmax = 8.3	OMax = 12.5°

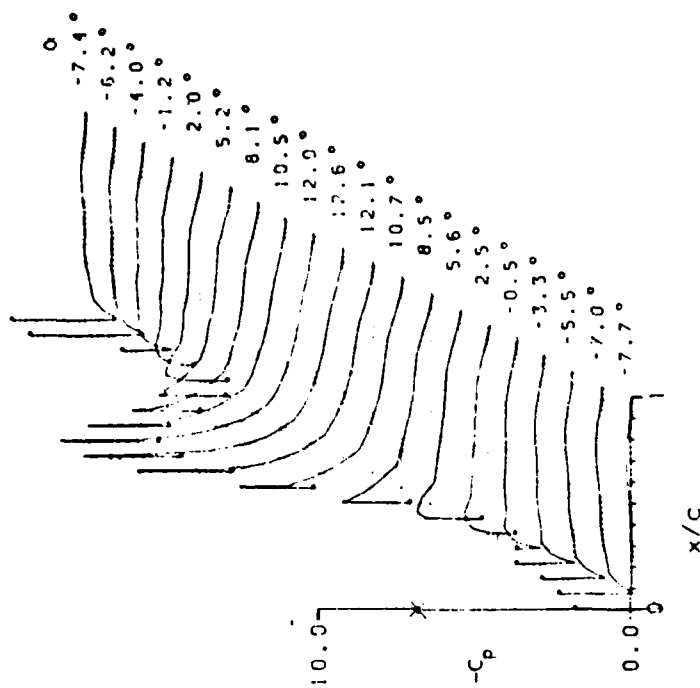
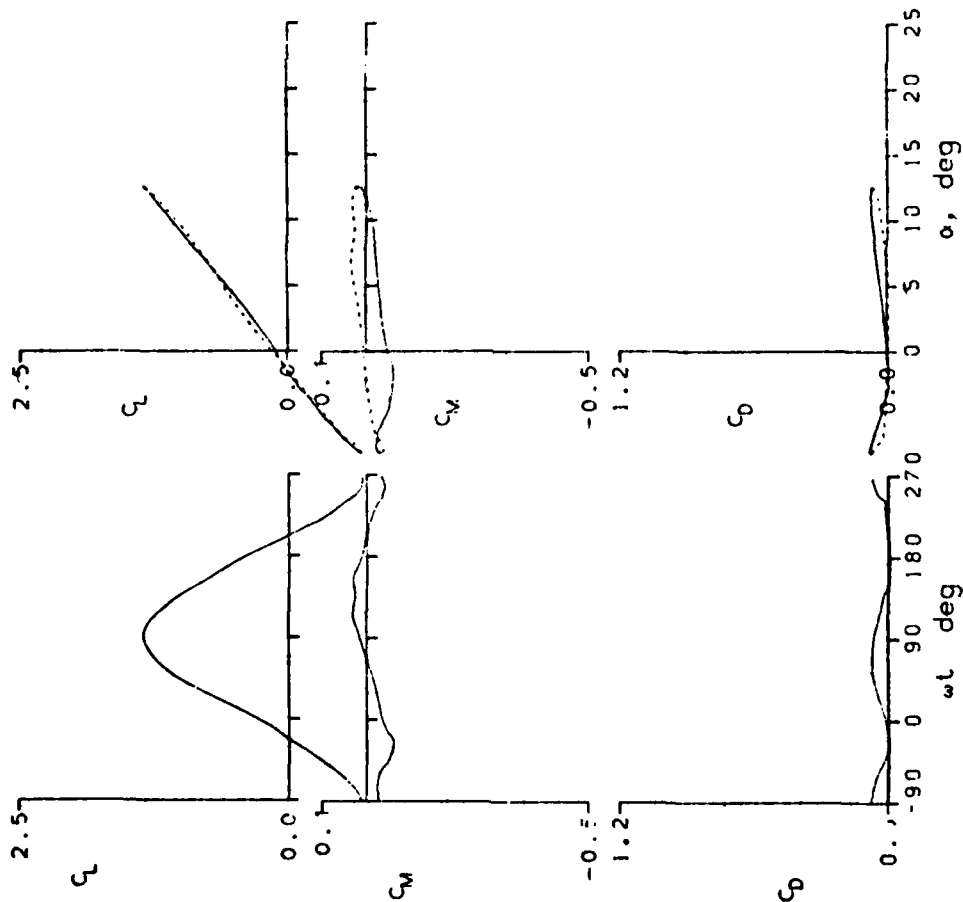


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 63323 $A_0 = 2.54^\circ$ $k = 0.097$
 $Re = 3.75 \text{ E}6$ $A_1 = 10.15^\circ$ $M = 0.303$
 $C_{Lmax} = 1.37$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.08$
 $\alpha_{Lmax} = 12.7^\circ$ $\xi = 0.315$ $M_{max} = 1.157$
 $\alpha_{Cmin} = 0.3^\circ$ $-C_{Dmax} = 8.4$ $\alpha_{Mmax} = 12.7^\circ$

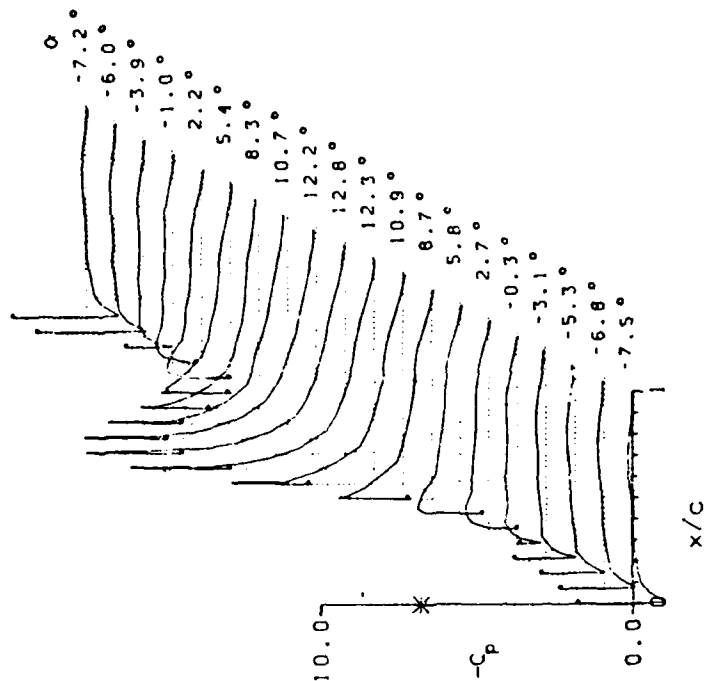
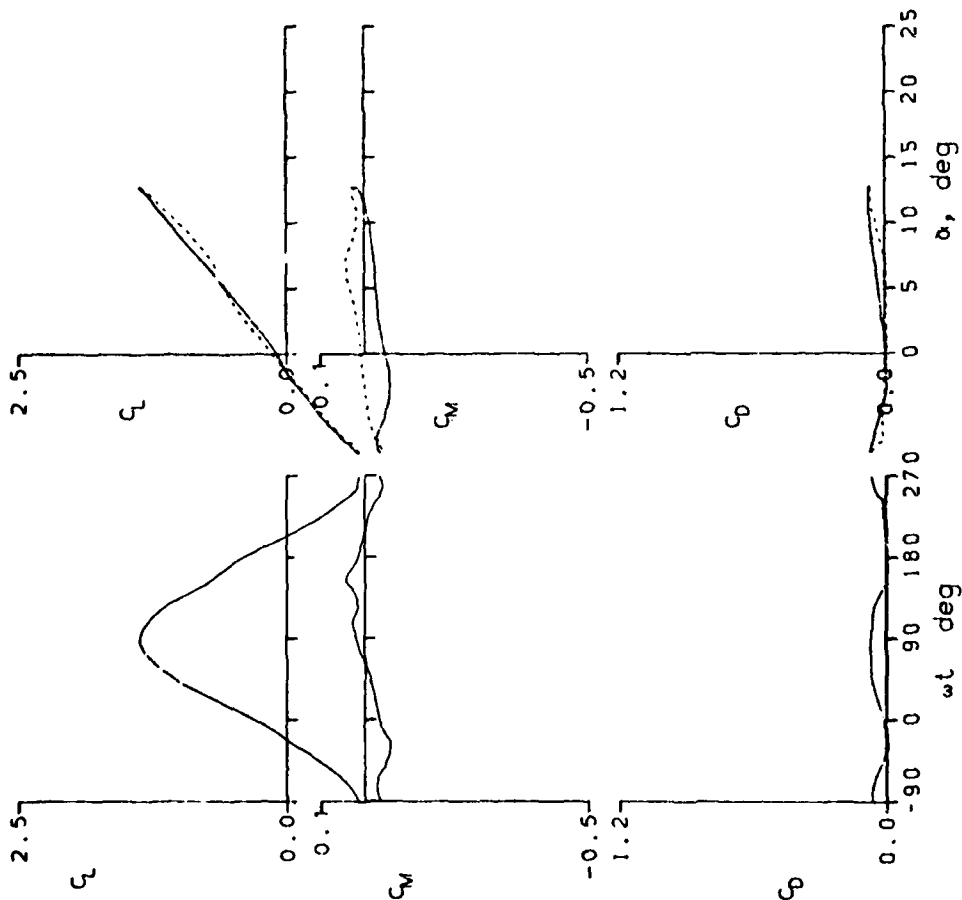


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64019	A0 = 14.77°	k = 0.025	TRIP
Re = 3.87 E6	A1 = 9.90°	M = 0.296	
C _{Lmax} = 1.51	C _{Mmin} = -0.18	C _{Dmax} = 0.44	
α _{Lmax} = 14.2°	ξ = 0.180	M _{max} = 0.976	
α _{Cmin} = 14.2°	-C _{pmax} = 6.9	α _{Mmax} = 12.7°	

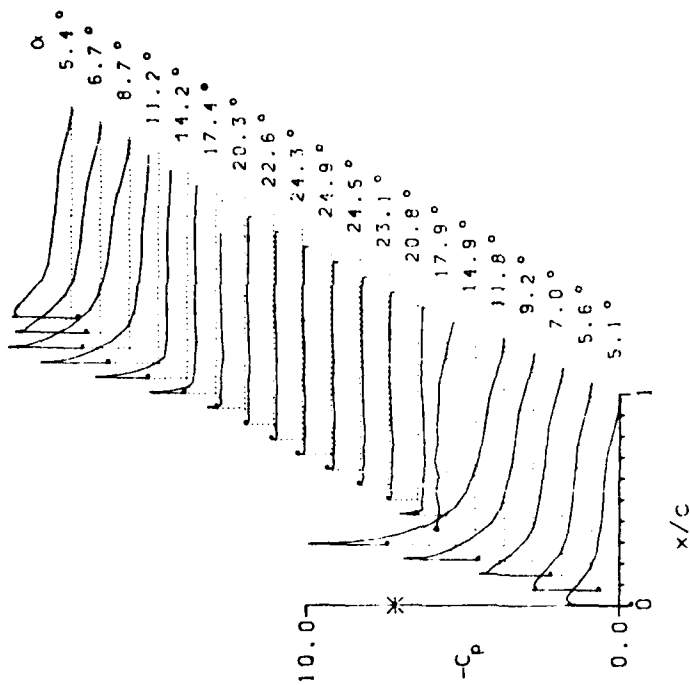
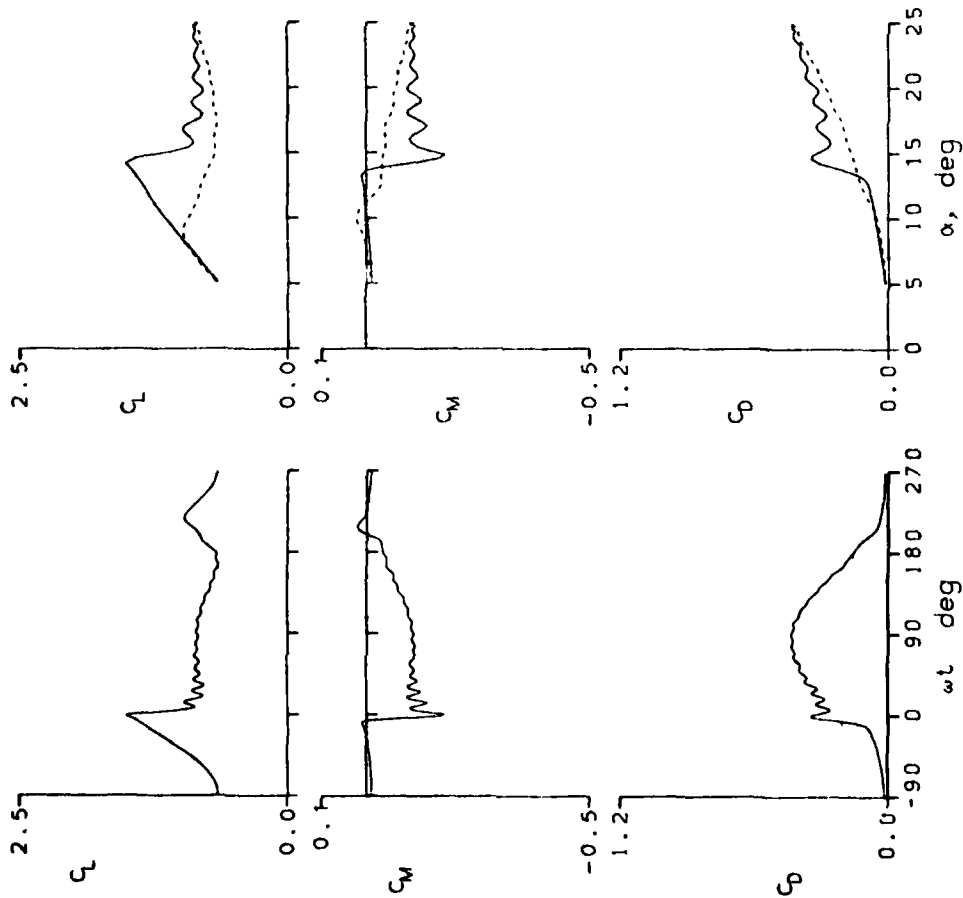


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRATE : 54021
 Re = 3.81 E6
 CLmax = 1.73
 CLmax = 15.8°
 CLmin = 14.2°
 A0 = 14.77°
 A1 = 9.90°
 CMmin = -0.26
 CMmax = 7.1
 CDmax = 0.48
 Mmax = 0.994
 QMmax = 13.3°
 TRIP
 k = 0.049
 M = 0.295
 CDmax = 0.48
 Mmax = 0.994
 QMmax = 13.3°

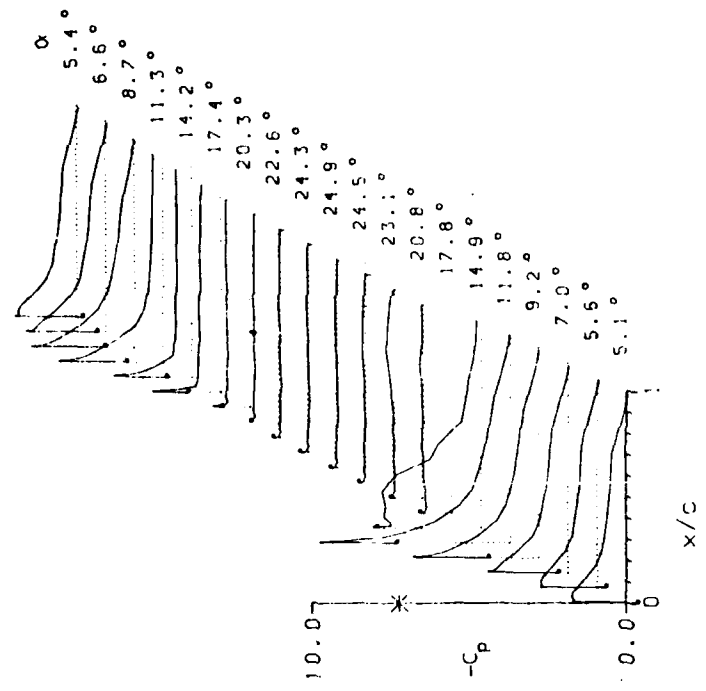
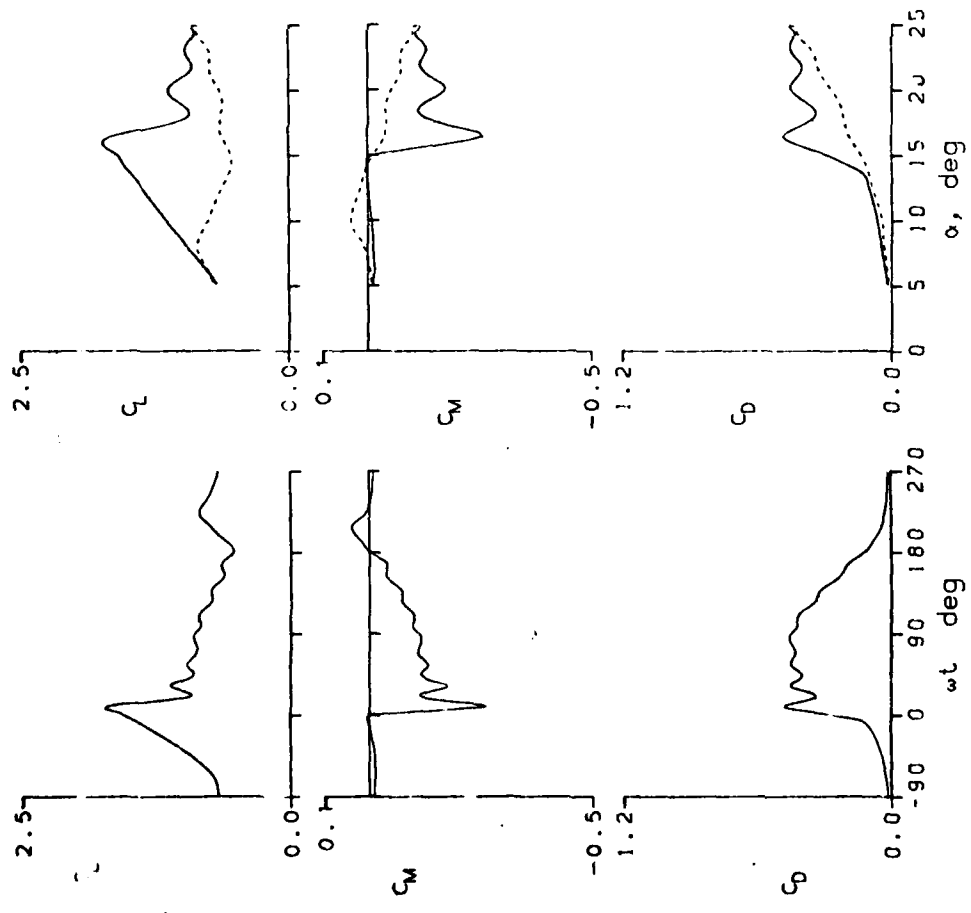


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64023	A0	= 14.79°	k	= 0.100	
Re	= 3.75 E6	A1	= 9.91°	M	= 0.292
C _{Lmax}	= 2.01	C _{Mmin}	= -0.37	C _{Dmax}	= 0.70
α _{Lmax}	= 18.8°	ξ	= 0.668	M _{max}	= 0.990
α _{Cmin}	= 14.4°	-C _{pmax}	= 7.3	α _{Mmax}	= 14.0°

TRIP

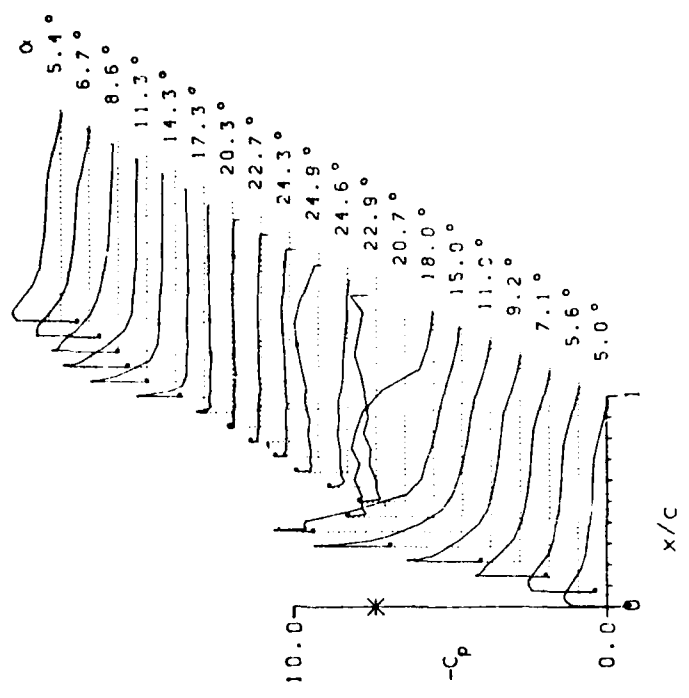
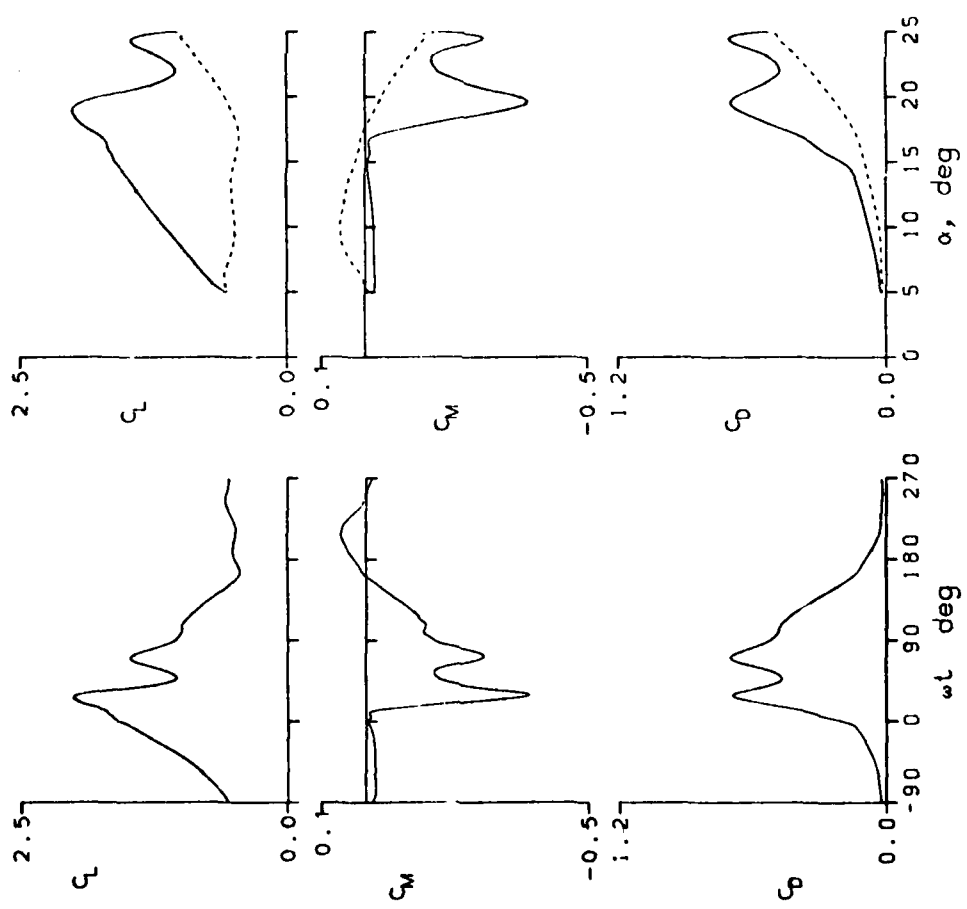


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64107	A0 = 14.77°	k = 0.050	TRIP
Re = 2.45 E6	A1 = 9.90°	M = 0.185	
CLmax = 1.87	CMmin = -0.31	CDmax = 0.59	
αLmax = 17.9°	ξ = 0.360	Mmax = 0.618	
αCMmin = 14.3°	-CDmax = 8.8	αMmax = 15.8°	

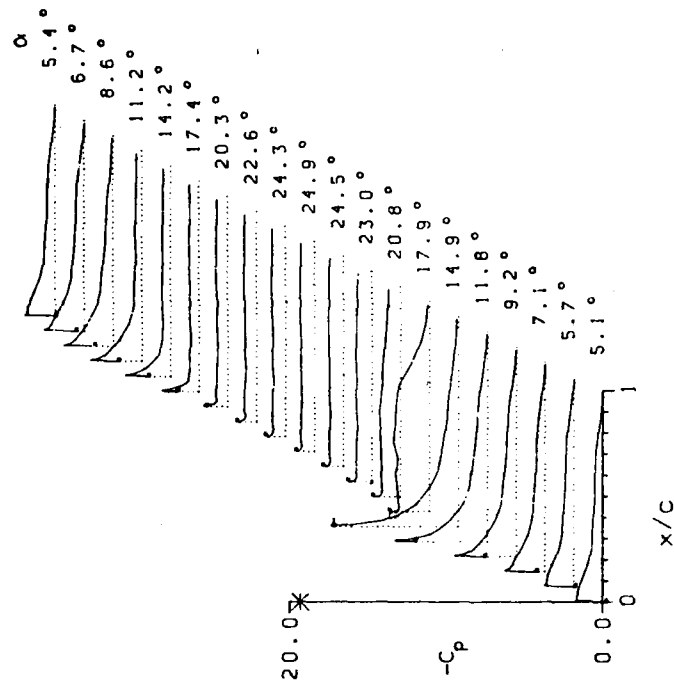
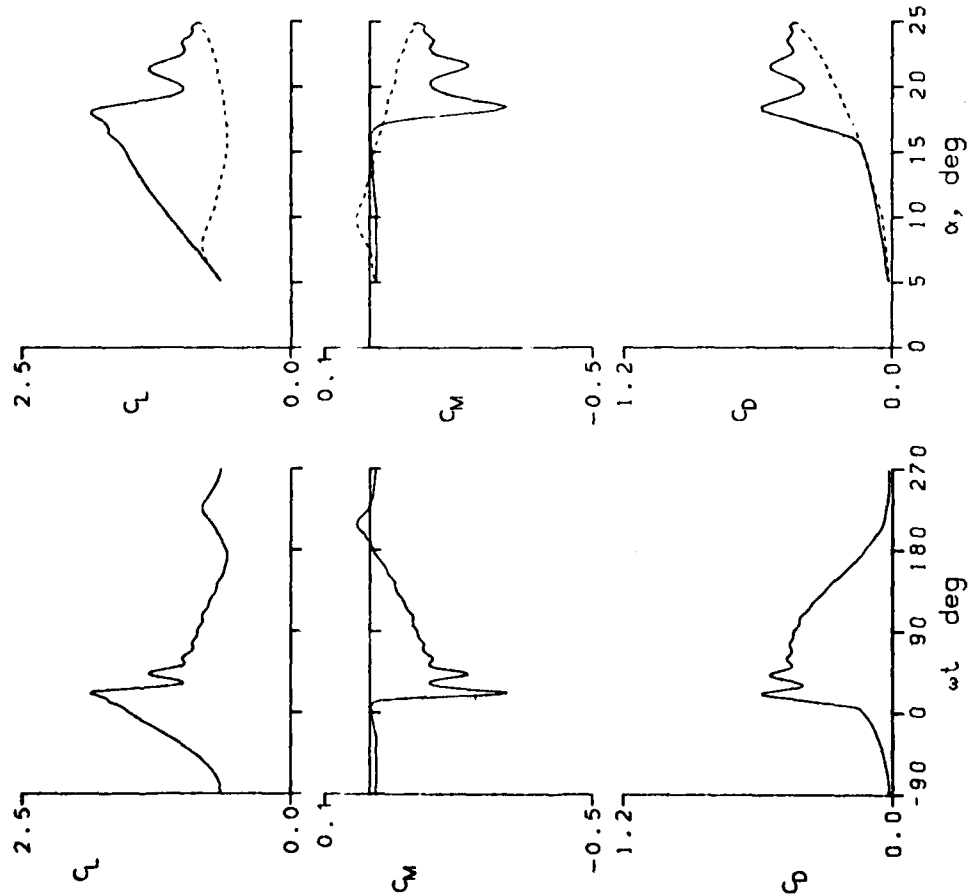


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64109	A0	= 14.78 °	k	= 0.099	
Re	= 2.44 E6	A1	= 9.90 °	M	= 0.184
CLmax	= 2.15	CMmin	= -0.39	CDmax	= 0.80
αLmax	= 20.5 °	ζ	= 0.494	Mmax	= 0.644
αCmin	= 14.2 °	-CPmax	= 9.5	αMmax	= 16.7 °

TRIP

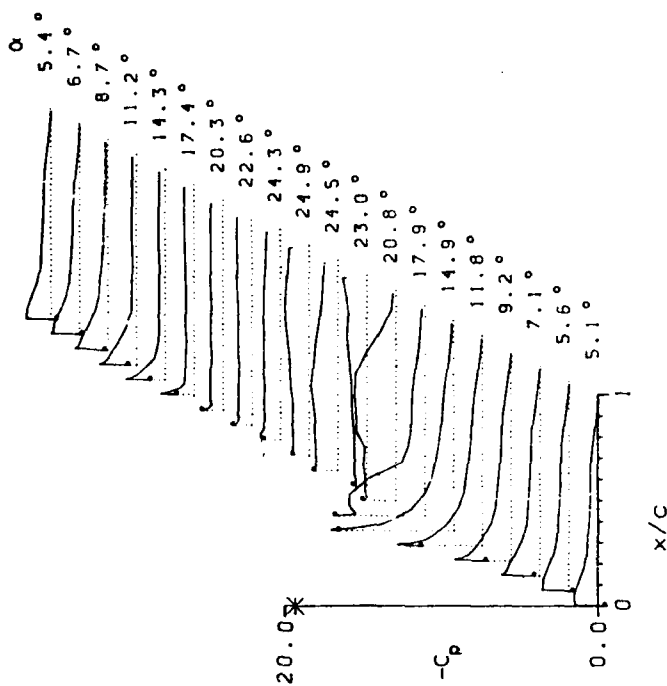
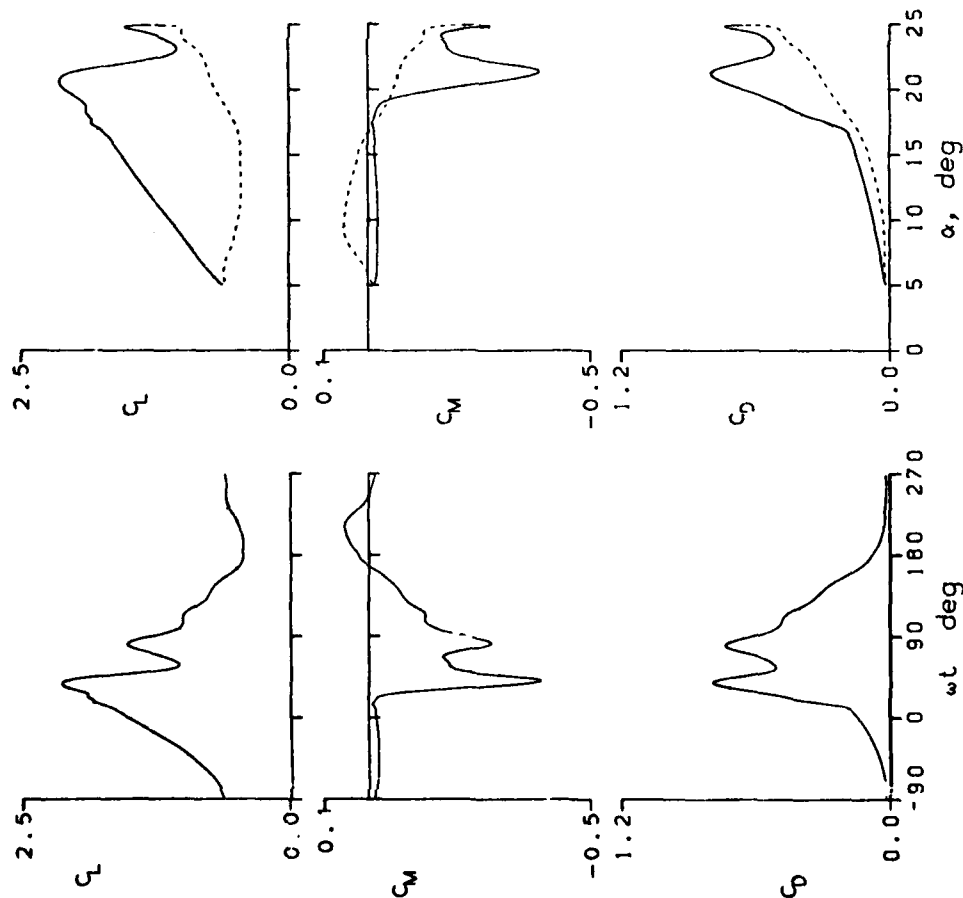


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64111	A0 = 14.79°	k = 0.148	TRIP
Re = 2.44 E6	A1 = 9.90°	M = 0.185	
CLmax = 2.32	CMmin = -0.44	CDmax = 0.96	
αLmax = 22.2°	ξ = 0.347	Mmax = 0.657	
αCMmin = 14.3°	-CDmax = 9.8	αMmax = 17.7°	

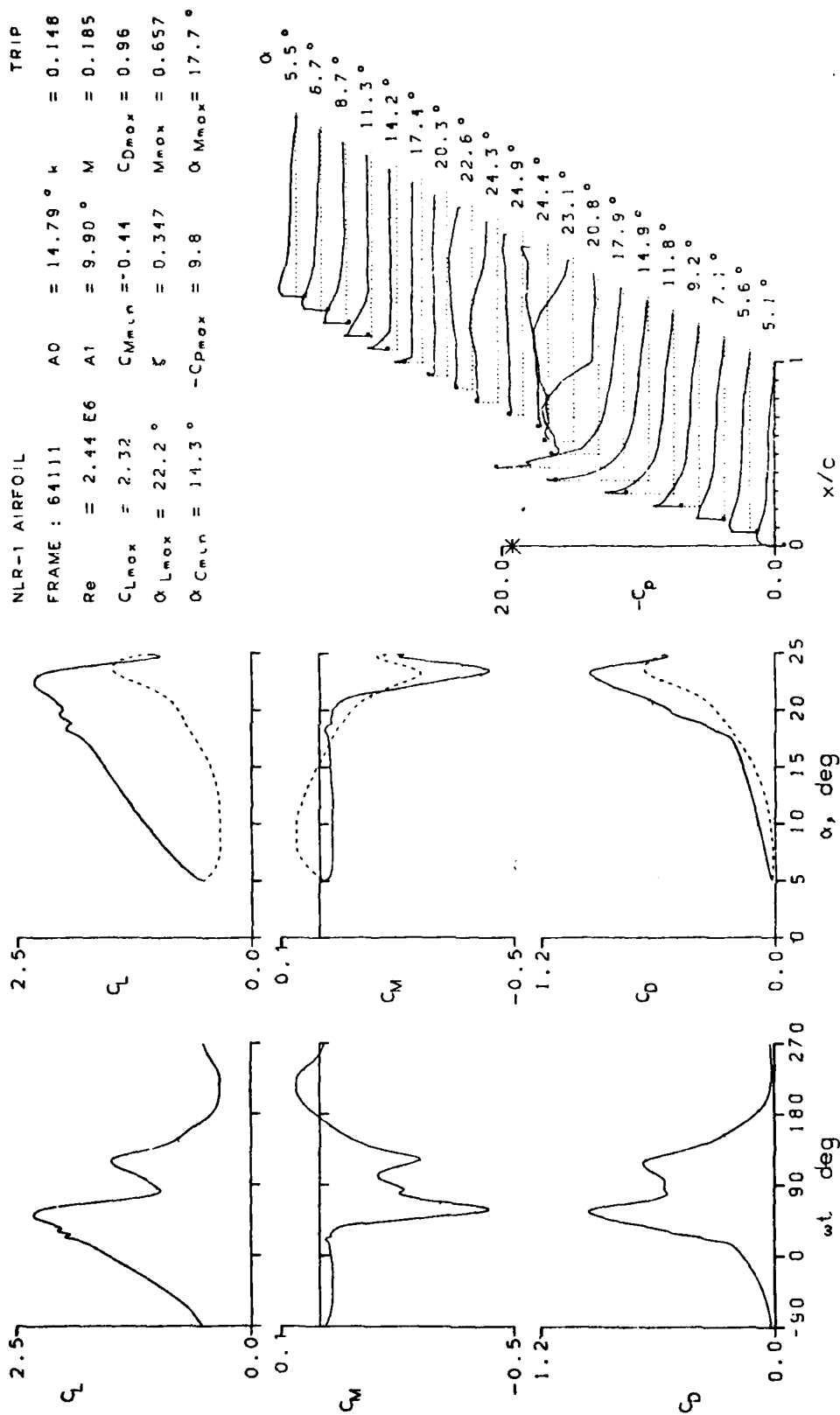


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64119	A0 = 2.35°	k = 0.010	TRIP
Re = 3.82 E6	A1 = 10.15°	M = 0.302	
C _{Lmax} = 1.30	C _{Mmin} = -0.05	C _{Dmax} = 0.15	
α _{Lmax} = 12.2°	ξ = 0.025	M _{max} = 0.965	
α _{Cmin} = 2.0°	-C _{pmax} = 6.5	α _{Mmax} = 12.1°	

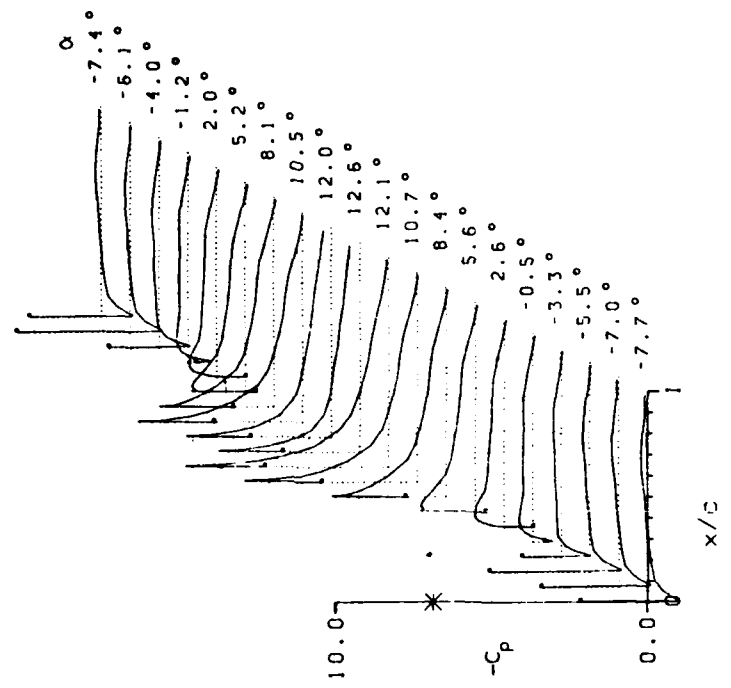
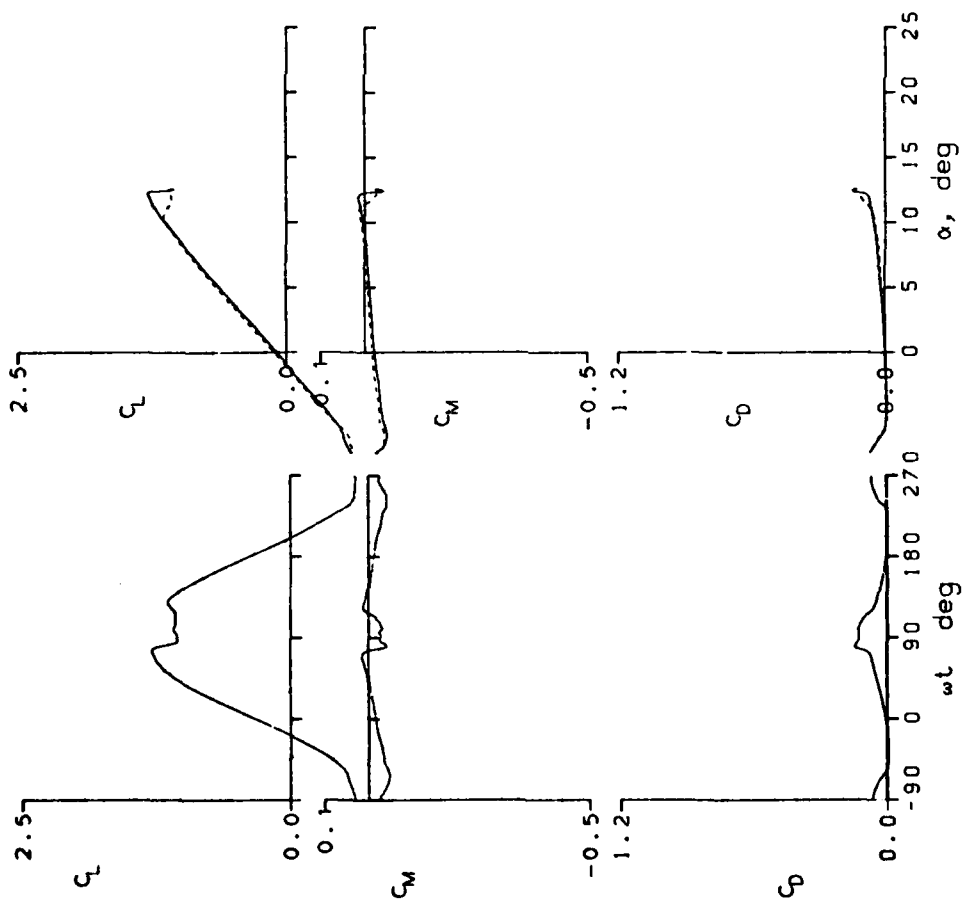


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64J21	A0 = 2.36°	k = 0.024
Re = 3.79 E6	A1 = 10.15°	M = 0.302
CLmax = 1.35	CMmin = -0.09	CDmax = 0.20
αLmax = 12.5°	ξ = 0.069	Mmax = 0.988
αCMmin = 2.0°	-CDmax = 6.8	ΔMmax = 12.4°

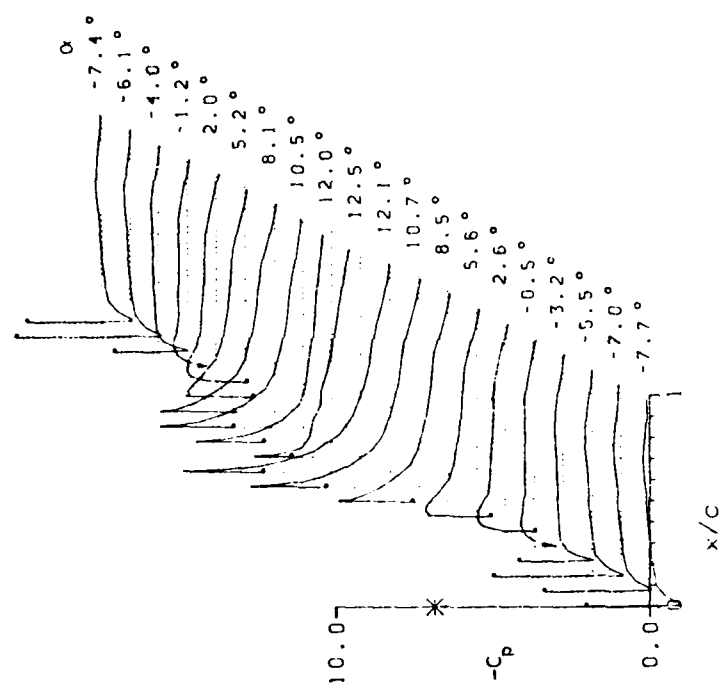
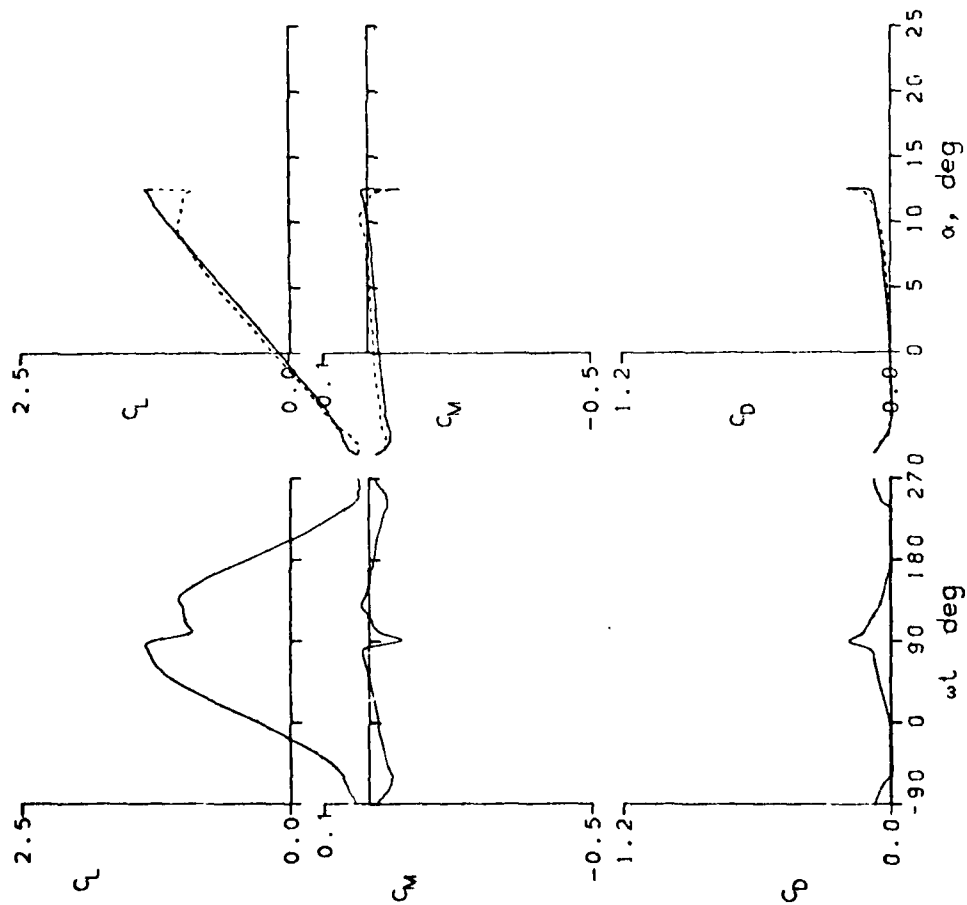


Figure 18.- Continued.

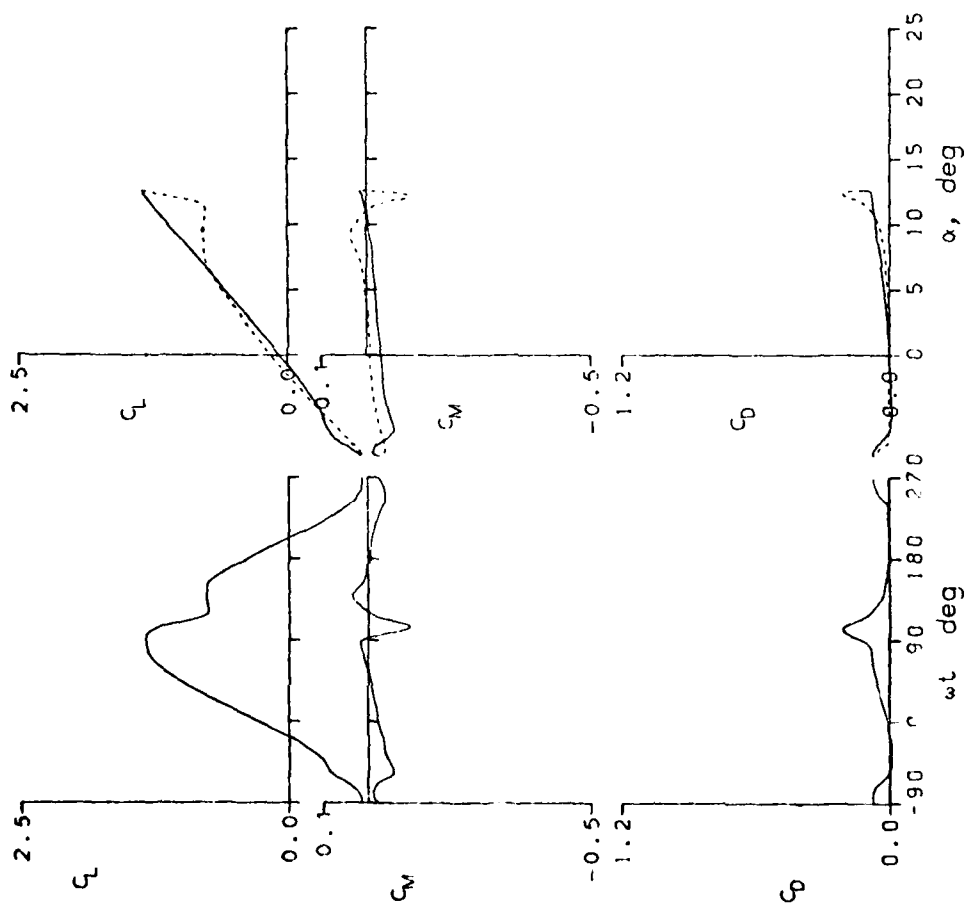


Figure 18.- Continued.

AD-A121 598 AN EXPERIMENTAL STUDY OF DYNAMIC STALL ON ADVANCED
AIRFOIL SECTIONS VOLUM. (U) NATIONAL AERONAUTICS AND
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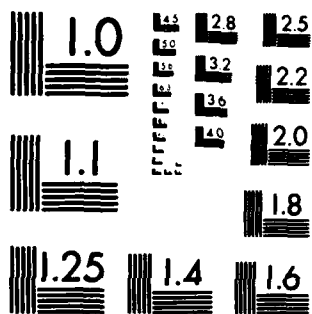
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NLR-1 AIRFOIL

FRAME : 54204	A0 = 2.34°	k = 0.097
Re = 3.77 E6	A1 = 10.15°	M = 0.302
CLmax = 1.35	CMmin = -0.07	CDmax = 0.14
α Lmax = 12.6°	ξ = 0.293	Mmax = 1.003
α CMmin = 0.5°	-CDmax = 6.9	α Mmax = 12.5°

TRIP

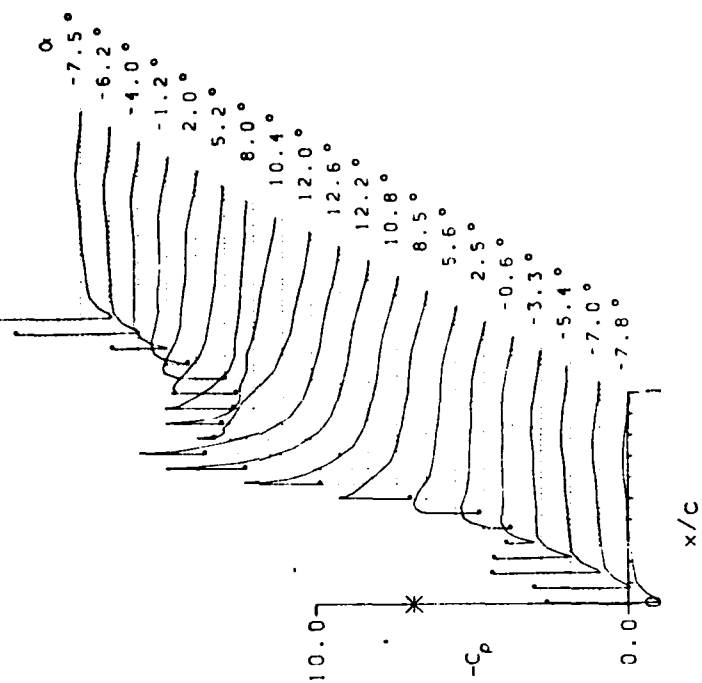
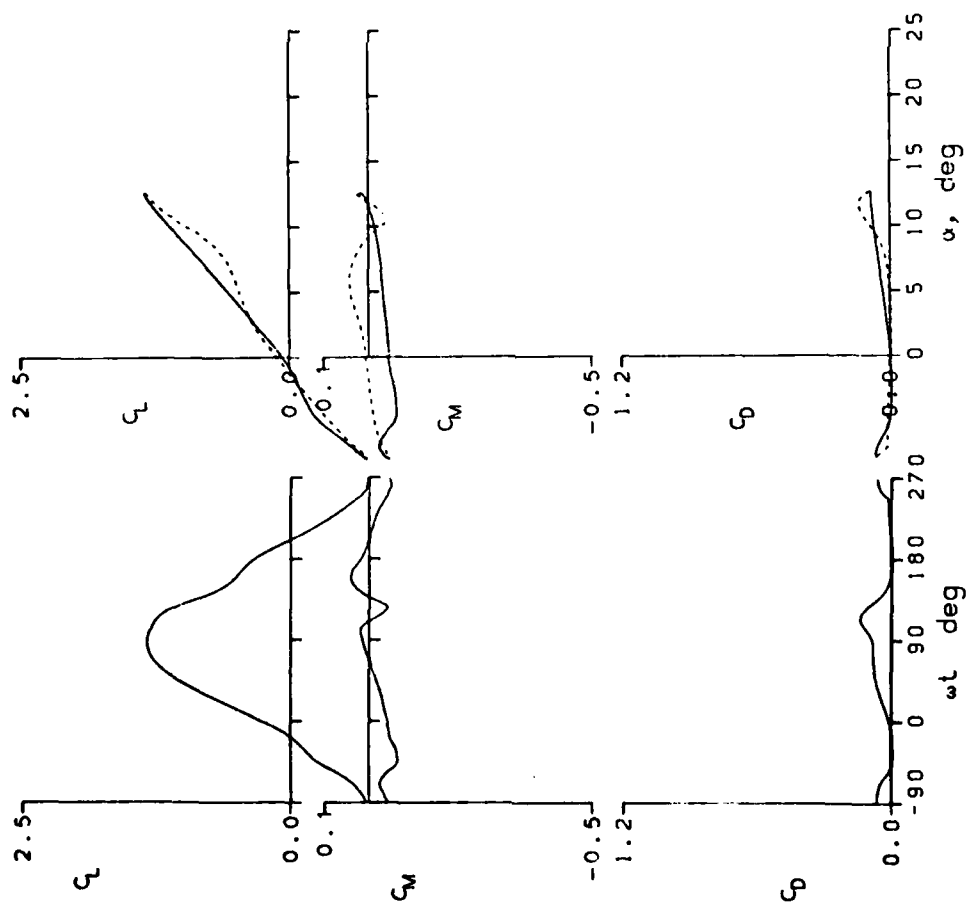


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64212	A0 = -2.19°	κ = 0.010
Re = 3.72 E6	A1 = 10.00°	M = 0.302
CLmax = 0.92	CMmin = -0.05	CDmax = 0.17
αLmax = 8.0°	ζ = 0.044	Mmax = 0.685
αCMmin = -2.7°	-CDmax = 3.5	αMmax = -6.3°

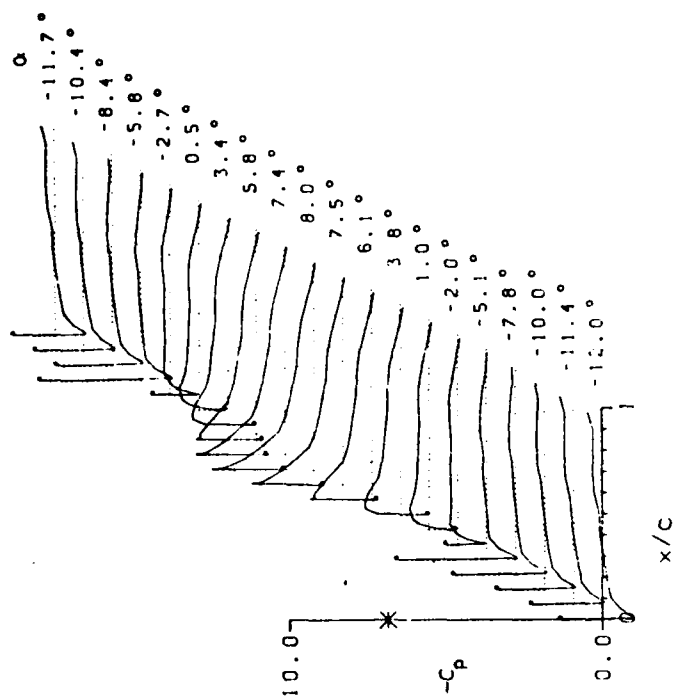
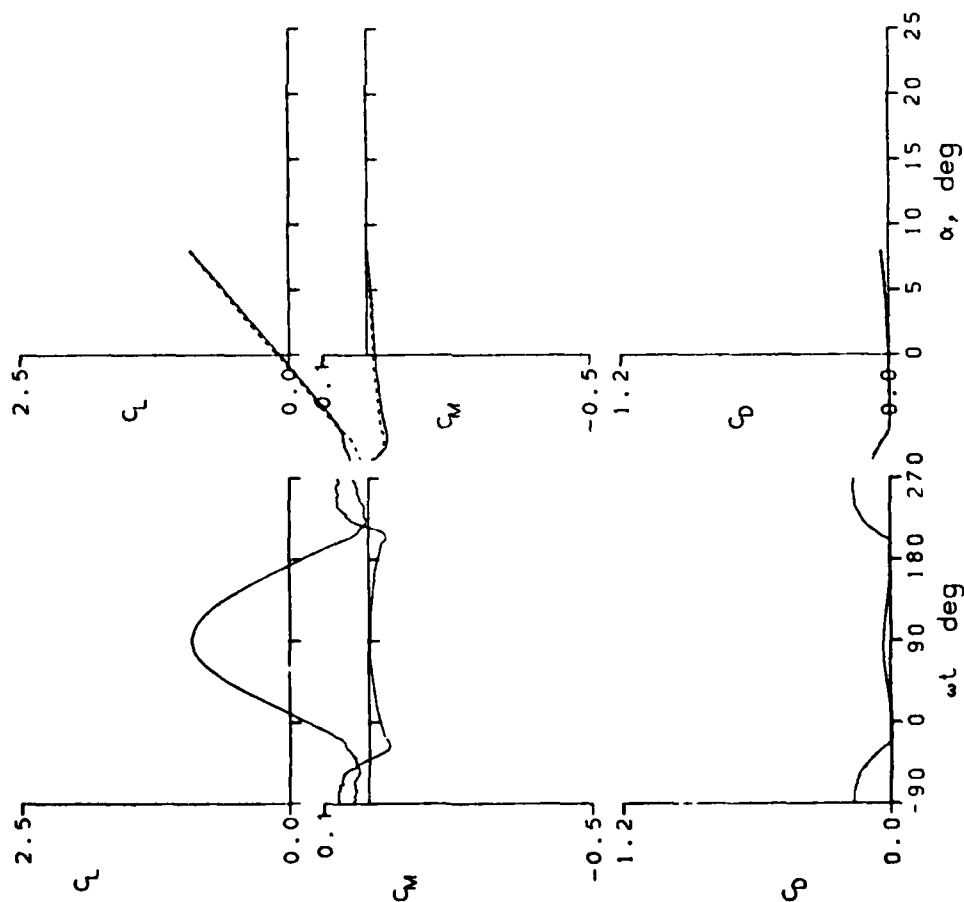


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64213	A0	= -2.19°	k	= 0.024	
Re	= 3.70 E6	A1	= 10.00°	M	= 0.303
CLmax	= 0.92	CMmin	= -0.06	CDmax	= 0.18
OLmax	= 3.0°	ξ	= 0.094	Mmax	= 0.711
OLmin	= -2.7°	-CPmax	= 3.8	OLmax	= -6.6°

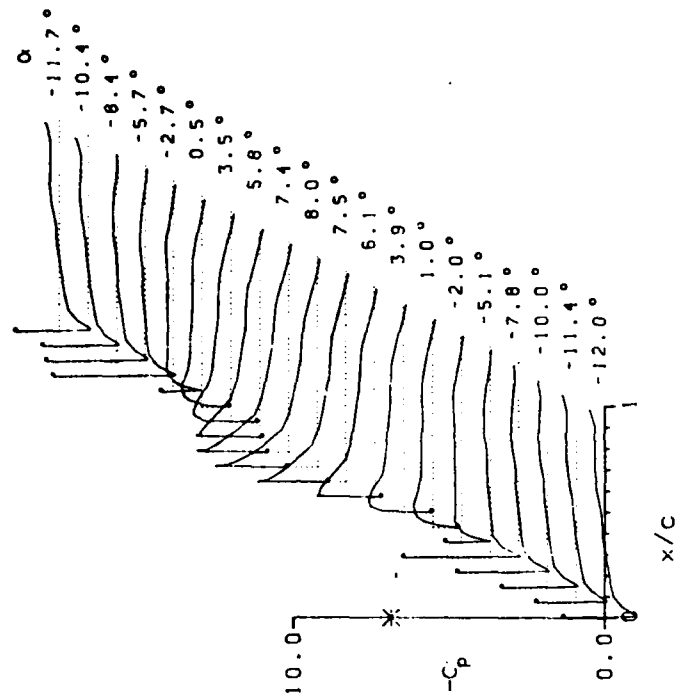
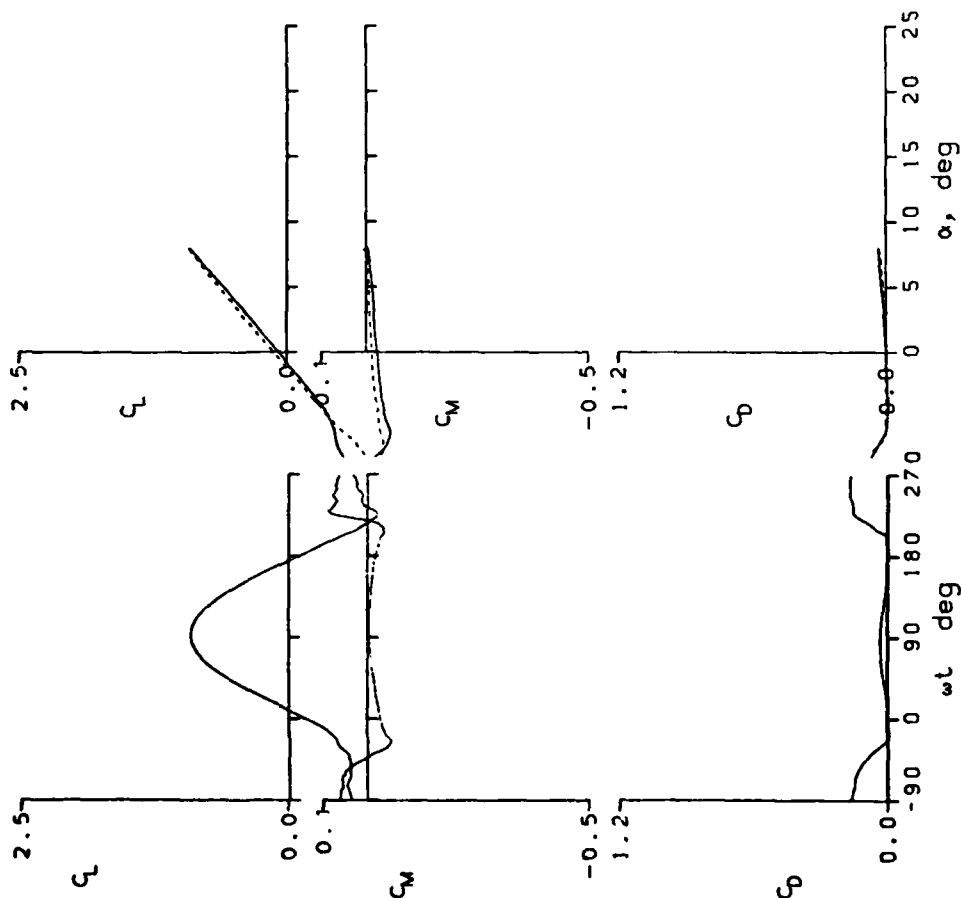


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 54214	A0	= -2.18°	μ	= 0.048	
Re	= 3.69 E6	A1	= 10.00°	M	= 0.302
C _{Lmax}	= 0.91	C _{Mmin}	= -0.06	C _{Dmax}	= 0.20
Q _{Lmax}	= 8.0°	ξ	= 0.137	M _{max}	= 0.753
Q _{Cmin}	= -2.7°	-C _{Pmax}	= 4.2	Q _{Mmax}	= -7.5°

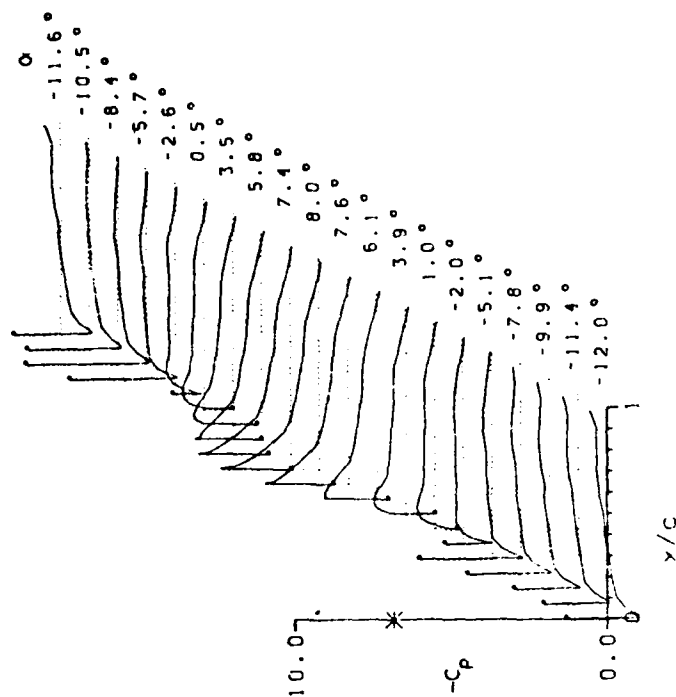
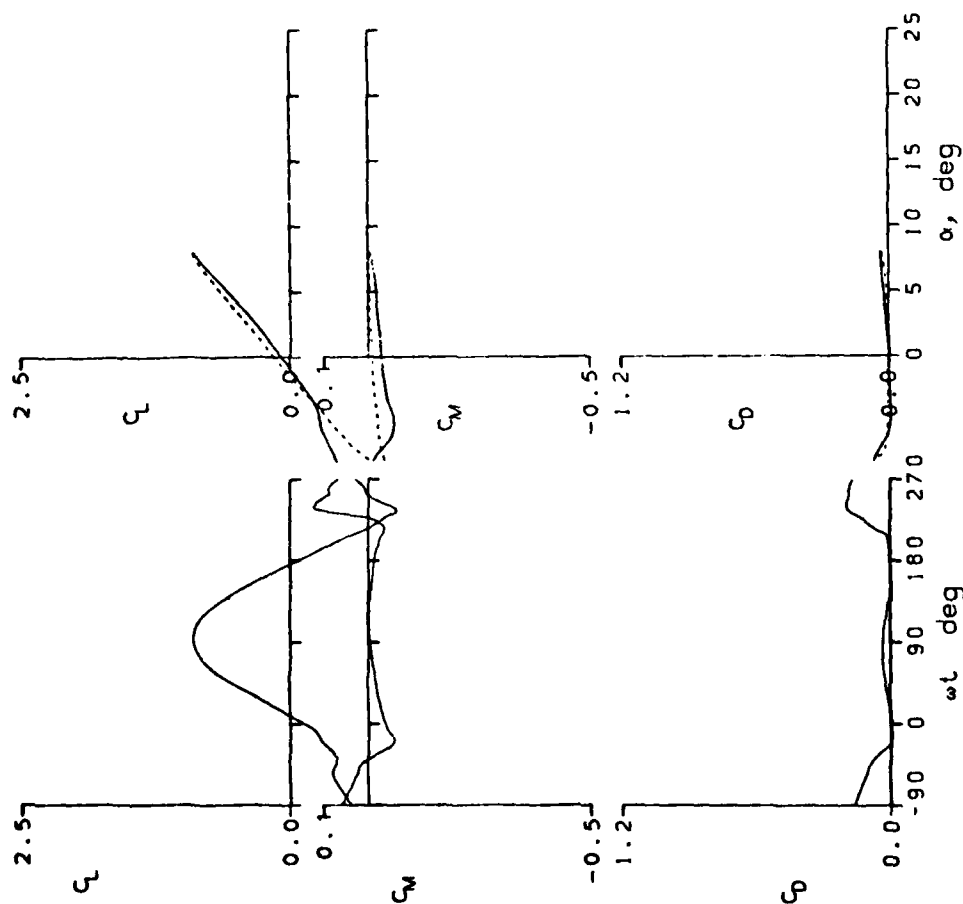


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 64215	A0 = -2.21°	k = 0.096
Re = 3.68 E6	A1 = 9.99°	M = 0.303
C _{Lmax} = 0.89	C _{Mmin} = -0.08	C _{Dmax} = 0.25
Q _{Lmax} = 8.0°	ξ = 0.208	M _{max} = 0.801
Q _{Cmin} = -2.8°	-C _{pmax} = 4.7	Q _{Mmax} = -8.5°

TRIP

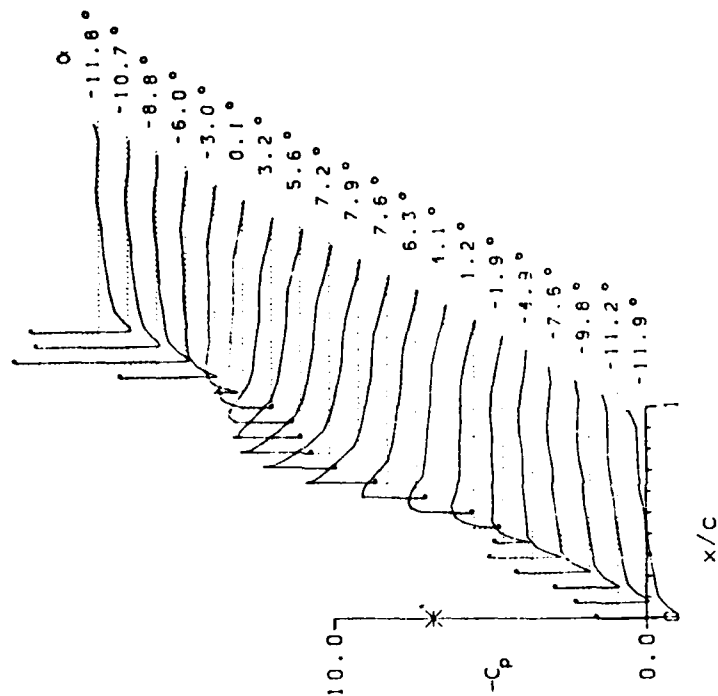
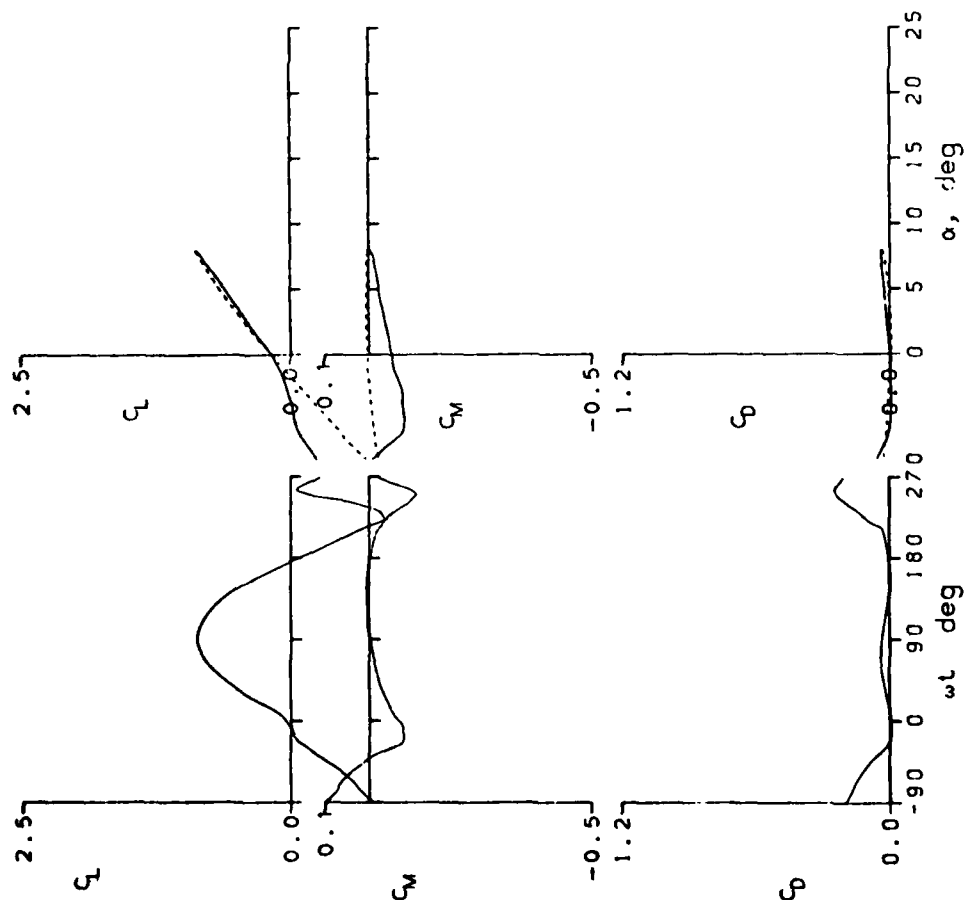


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 65121	A0	= -2.19°	k	= 0.010	
Re	= 3.72 E6	A1	= 10.00°	M	= 0.300
C_{Lmax}	= 0.94	C_{Mmin}	= -0.06	C_{Dmax}	= 0.18
α_{Lmax}	= 8.0°	ξ	= 0.017	M_{max}	= 0.675
α_{Cmin}	= -2.7°	$-C_{Dmax}$	= 3.4	α_{Mmax}	= 8.0°

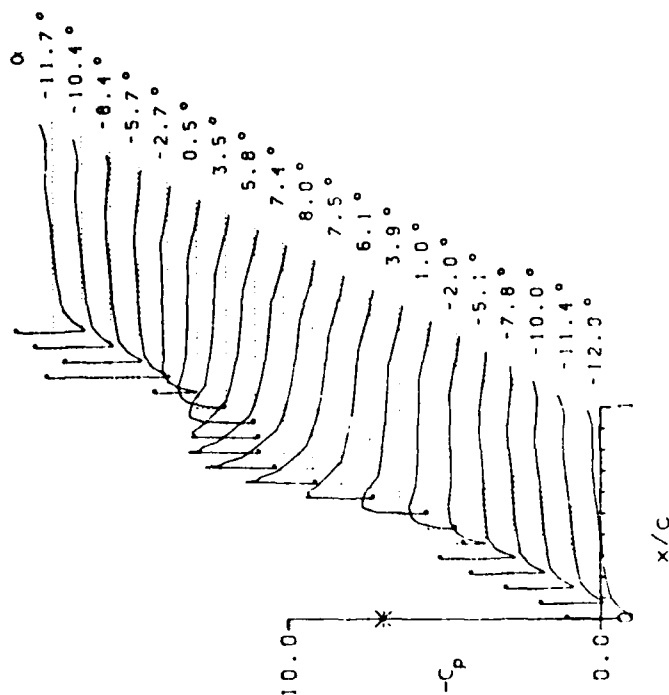
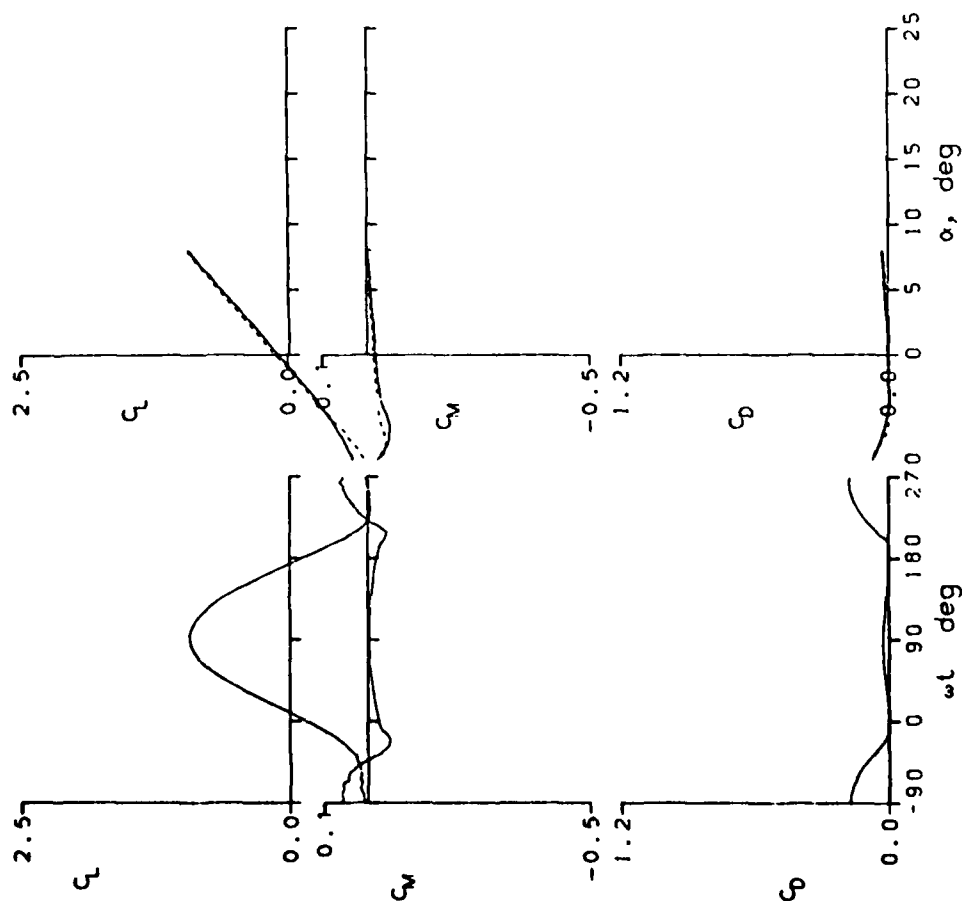


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 65122 $A_0 = -2.18^\circ$ $k = 0.024$
 $Re = 3.70 \times 10^6$ $A_1 = 10.00^\circ$ $M = 0.301$
 $C_{Lmax} = 0.95$ $C_{Mmin} = -0.06$ $C_{Dmax} = 0.18$
 $\alpha_{Lmax} = 8.0^\circ$ $\xi = 0.040$ $M_{max} = 0.680$
 $\alpha_{Cmin} = -2.5^\circ$ $-C_{Dmax} = 3.5$ $\alpha_{Mmax} = 8.0^\circ$

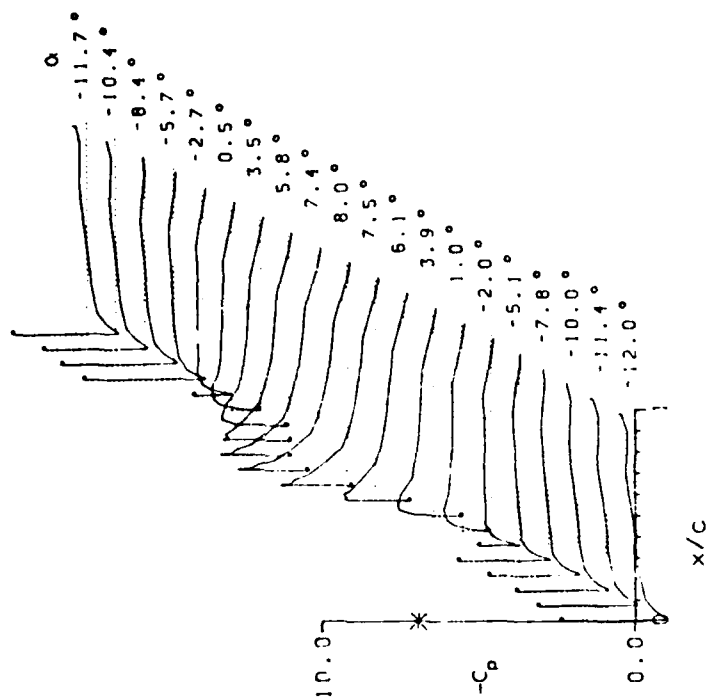
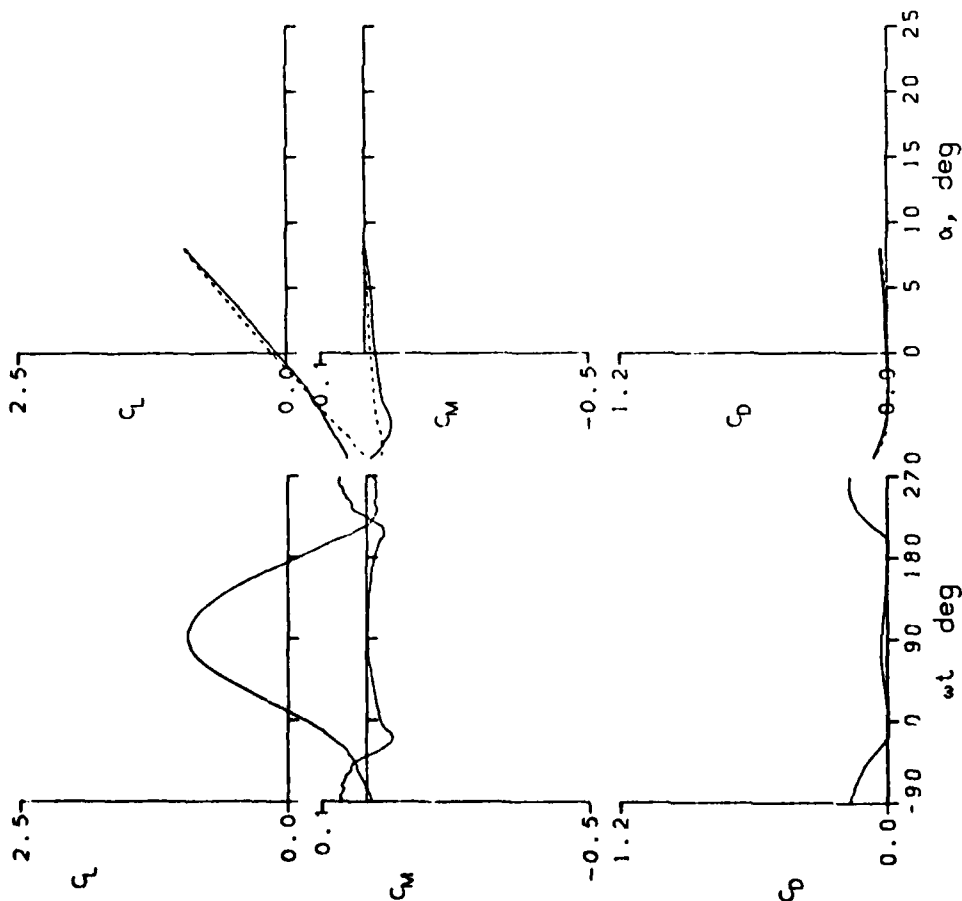


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 65123 $A_0 = -2.18^\circ$ $k = 0.042$
 $Re = 3.69 E6$ $A_1 = 10.00^\circ$ $M = 0.301$
 $C_{Lmax} = 0.94$ $C_{Mmin} = -0.07$ $C_{Dmax} = 0.19$
 $\alpha_{Lmax} = 8.0^\circ$ $\xi = 0.083$ $M_{max} = 0.715$
 $\alpha_{Cmin} = -2.7^\circ$ $-C_{Dmax} = 3.8$ $\alpha_{Mmax} = -7.5^\circ$

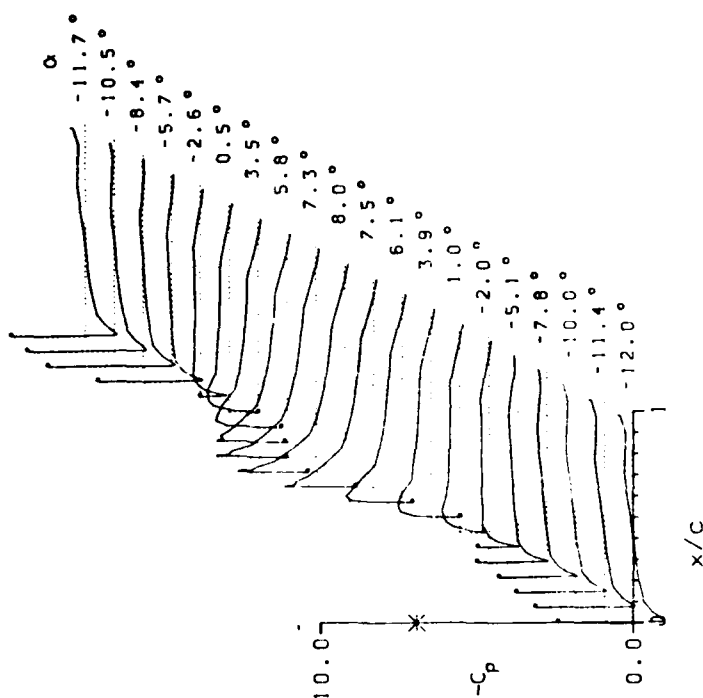
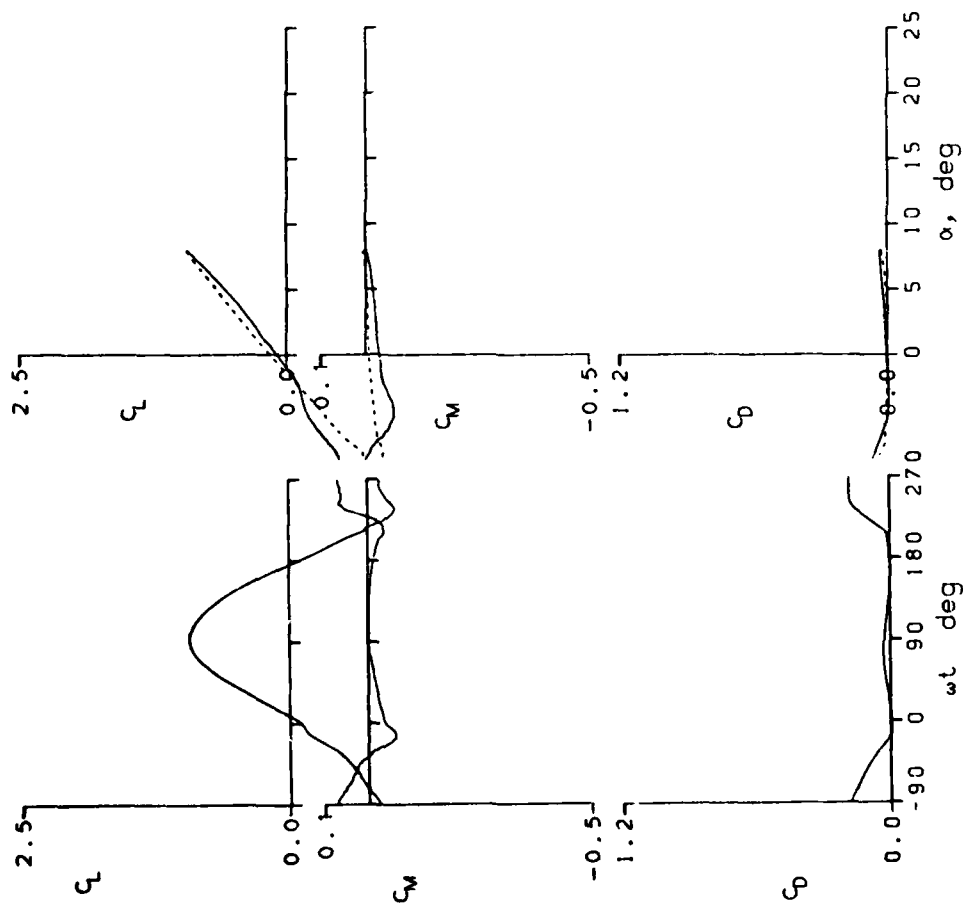


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 65200	A0 = -2.20°	k = 0.097
Re = 3.69 E6	A1 = 10.00°	M = 0.302
CLmax = 0.92	CMmin = -0.08	CDmax = 0.23
αLmax = 8.0°	ξ = 0.188	Mmax = 0.740
αCMmin = -11.9°	-CDmax = 4.1	αMmax = -8.2°

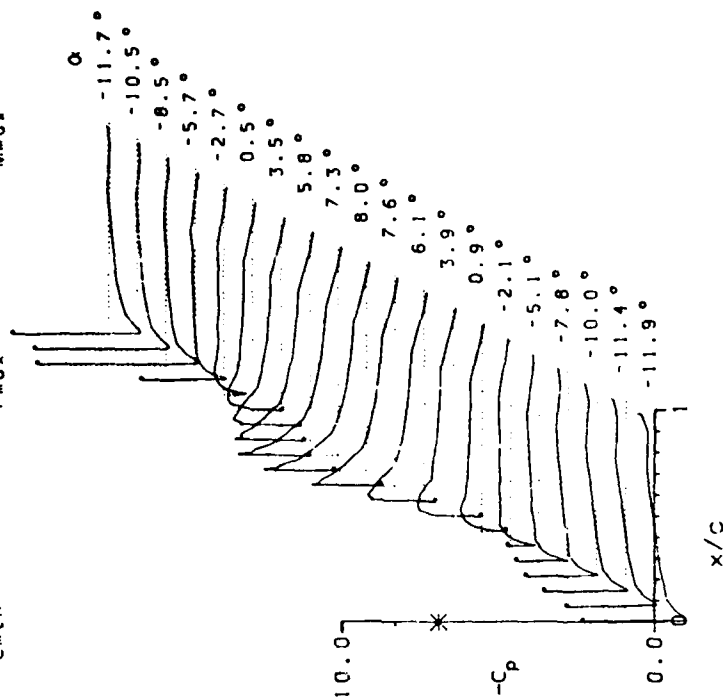
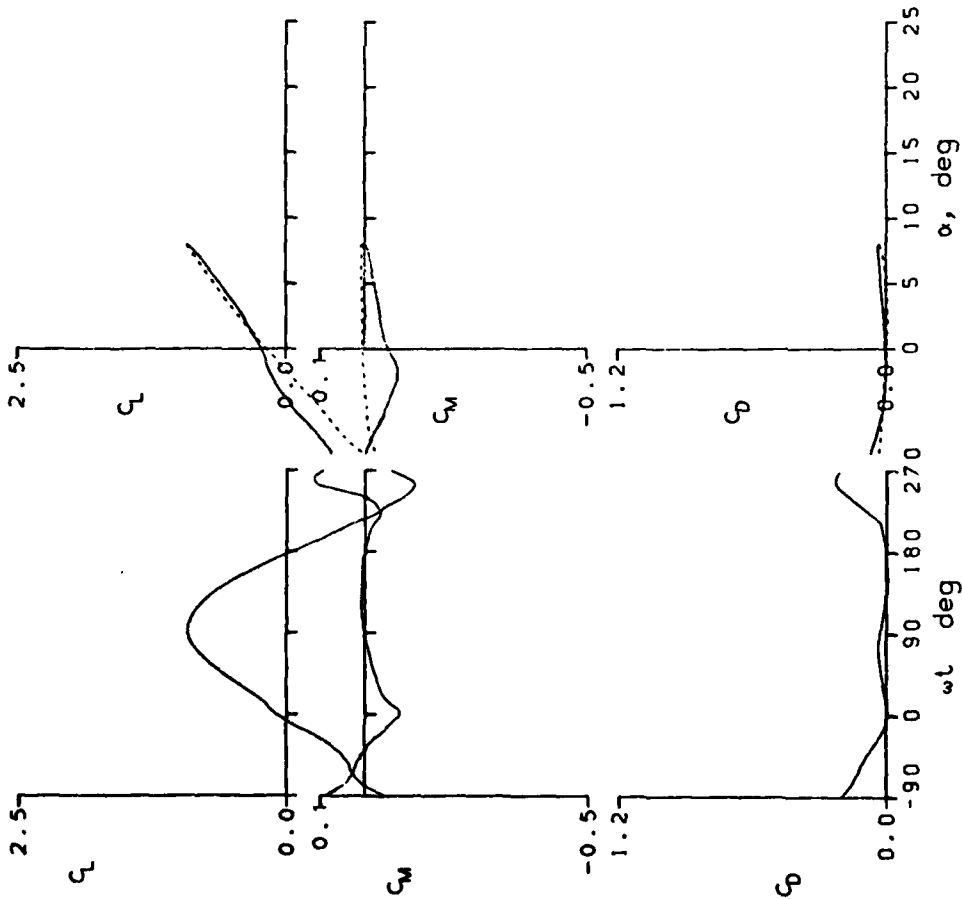


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 65207 $A_0 = 14.80^\circ$ $\mu = 0.100$
 $Re = 2.65 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.199$
 $C_{Lmax} = 2.37$ $C_{Mmin} = -0.36$ $C_{Dmax} = 0.84$
 $\alpha_{Lmax} = 21.6^\circ$ $\xi = 0.398$ $M_{max} = 0.867$
 $\alpha_{Cmin} = 14.3^\circ$ $-C_{Pmax} = 13.4$ $\alpha_{Mmax} = 18.3^\circ$

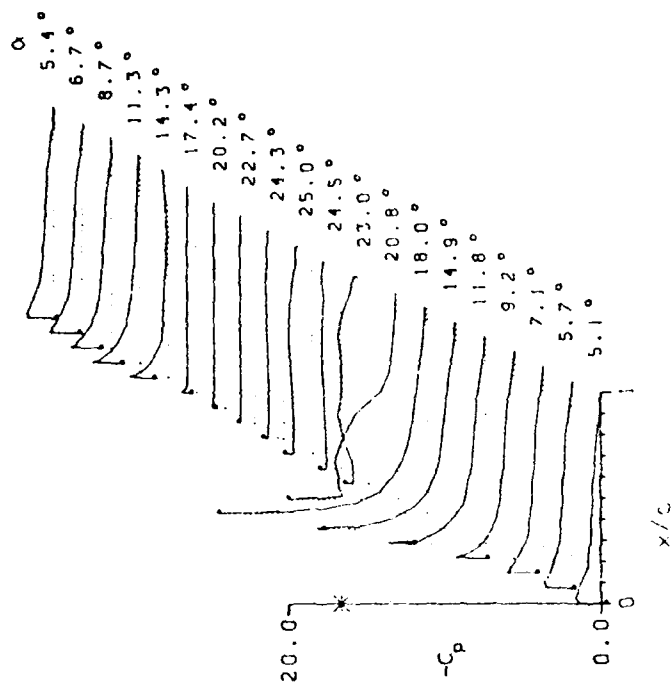
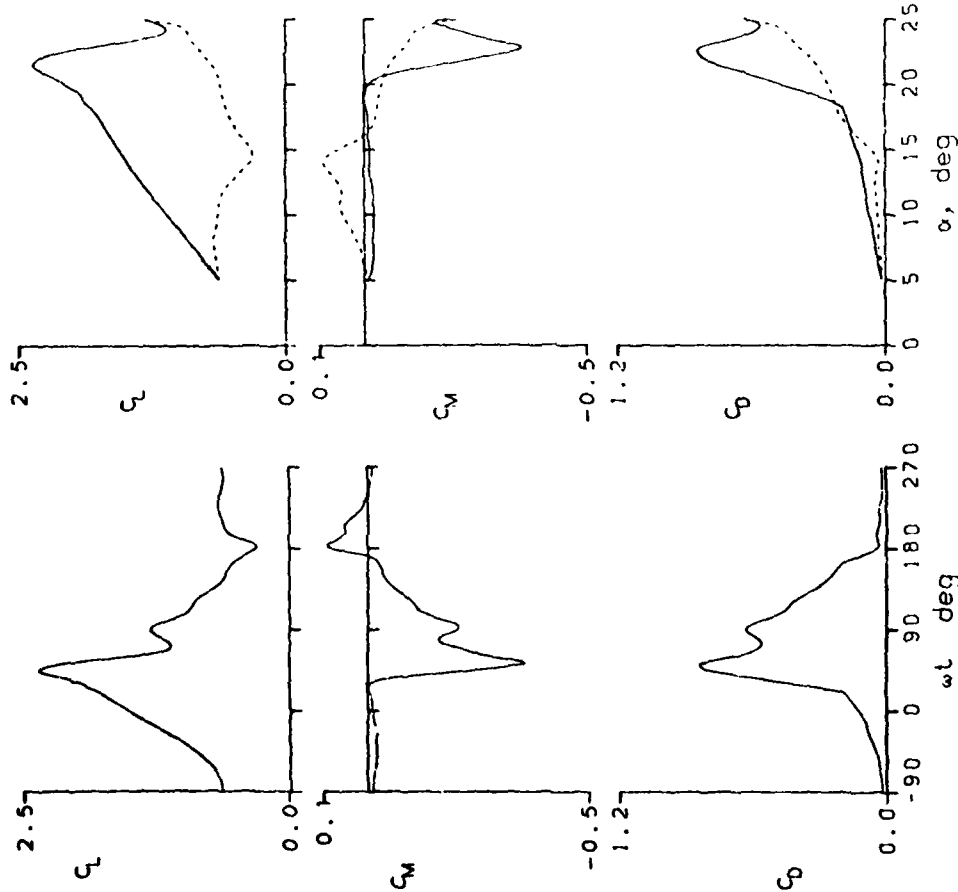


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 65209	A0 = 14.80°	h = 0.102
Re = 3.78 E6	A1 = 9.91°	M = 0.292
CLmax = 2.08	CMmin = -0.34	CDmax = 0.71
Q Lmax = 19.4°	ζ = 0.611	Mmax = 1.188
Q CMmin = 14.4°	-CDmax = 9.3	Q Mmax = 14.7°

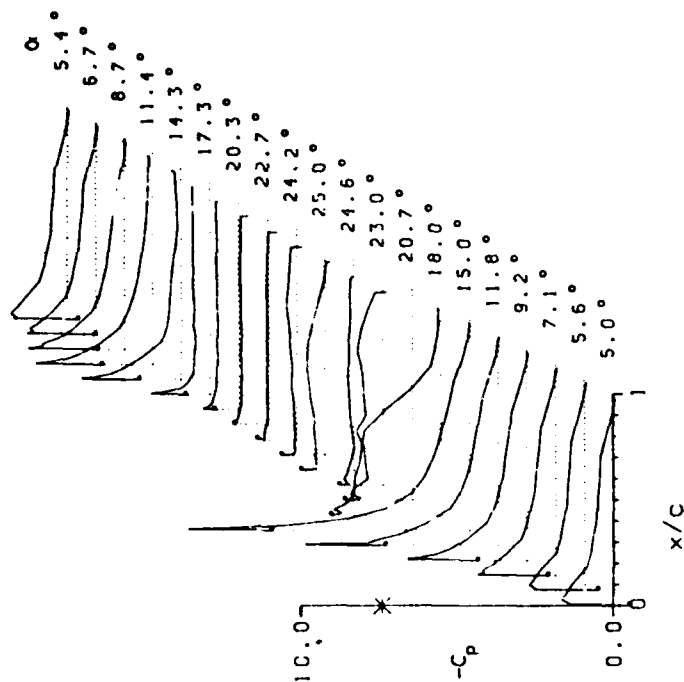
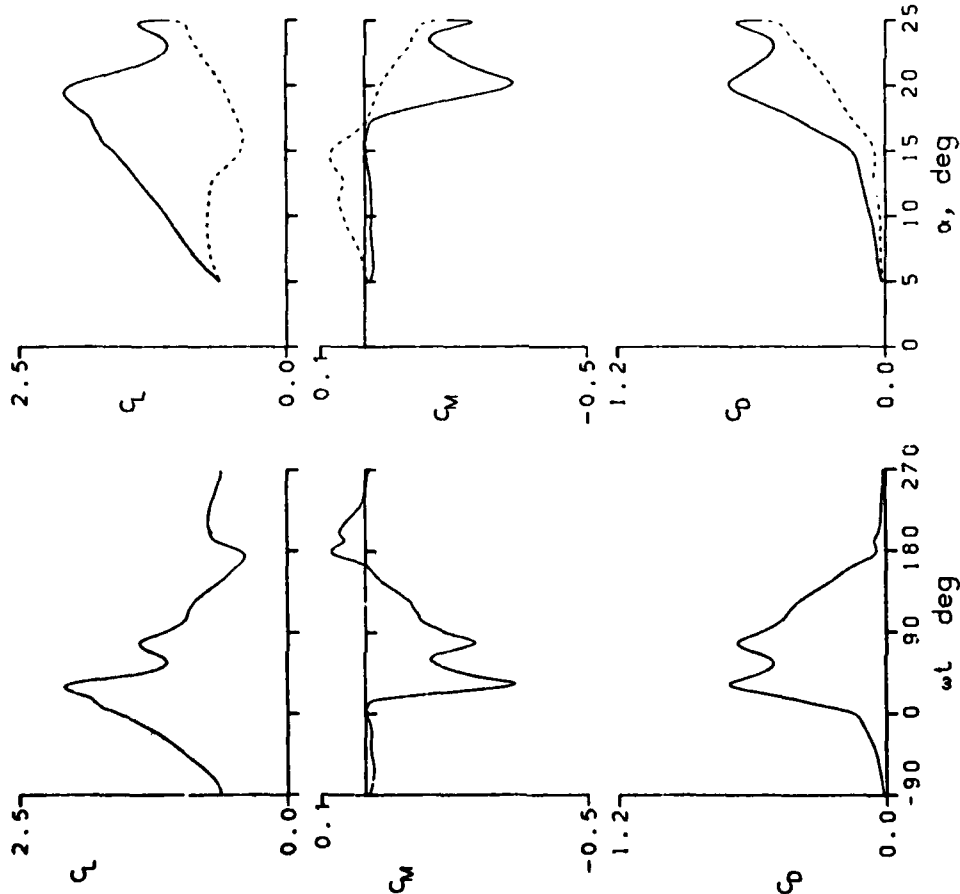


Figure 18.- Continued.

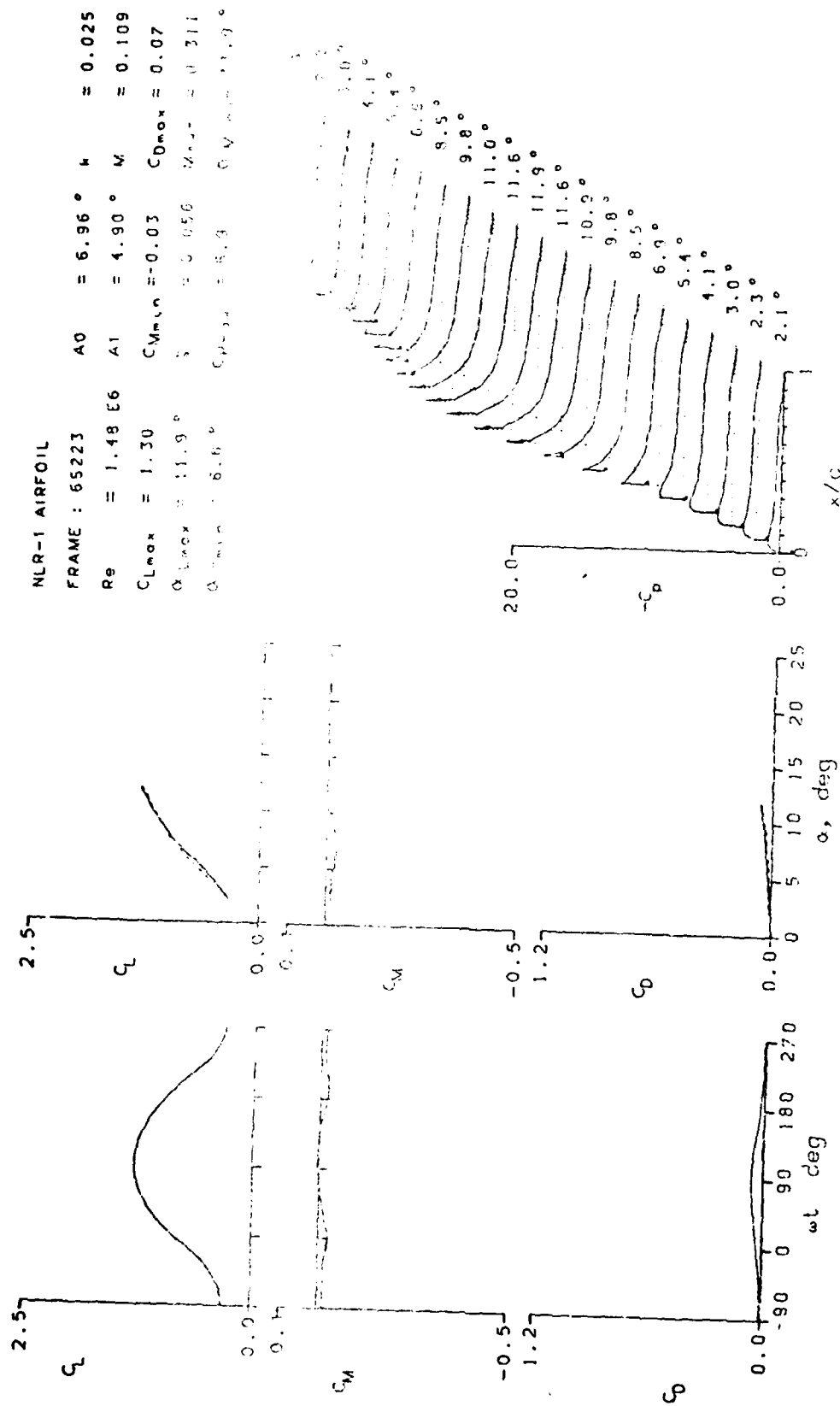


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 653C0	A0 = 6.96°	k = 0.200
Re = 1.47 E6	A1 = 4.89°	M = 0.109
C _{Lmax} = 1.27	C _{Mmin} = -0.04	C _{Dmax} = 0.08
α _{Lmax} = 11.9°	ζ = 0.448	M _{max} = 0.301
α _{Cmin} = 6.8°	-C _{pmax} = 6.4	α _{Mmax} = 11.8°

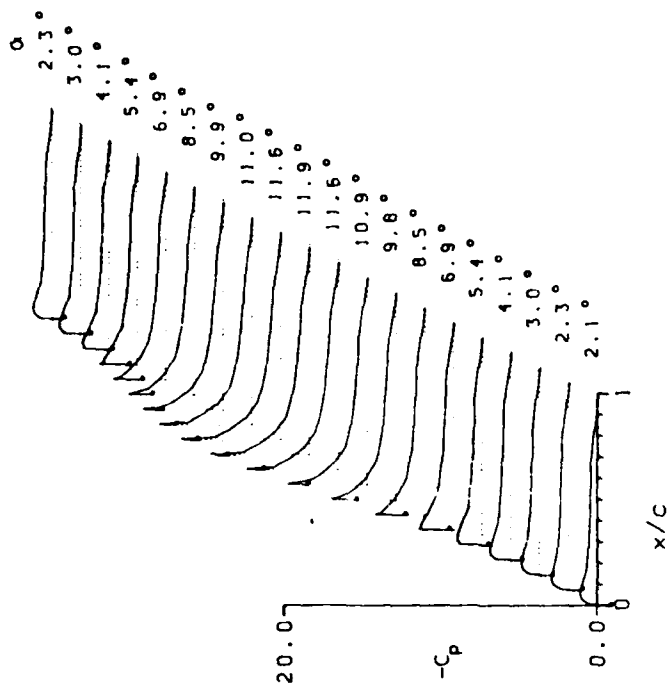
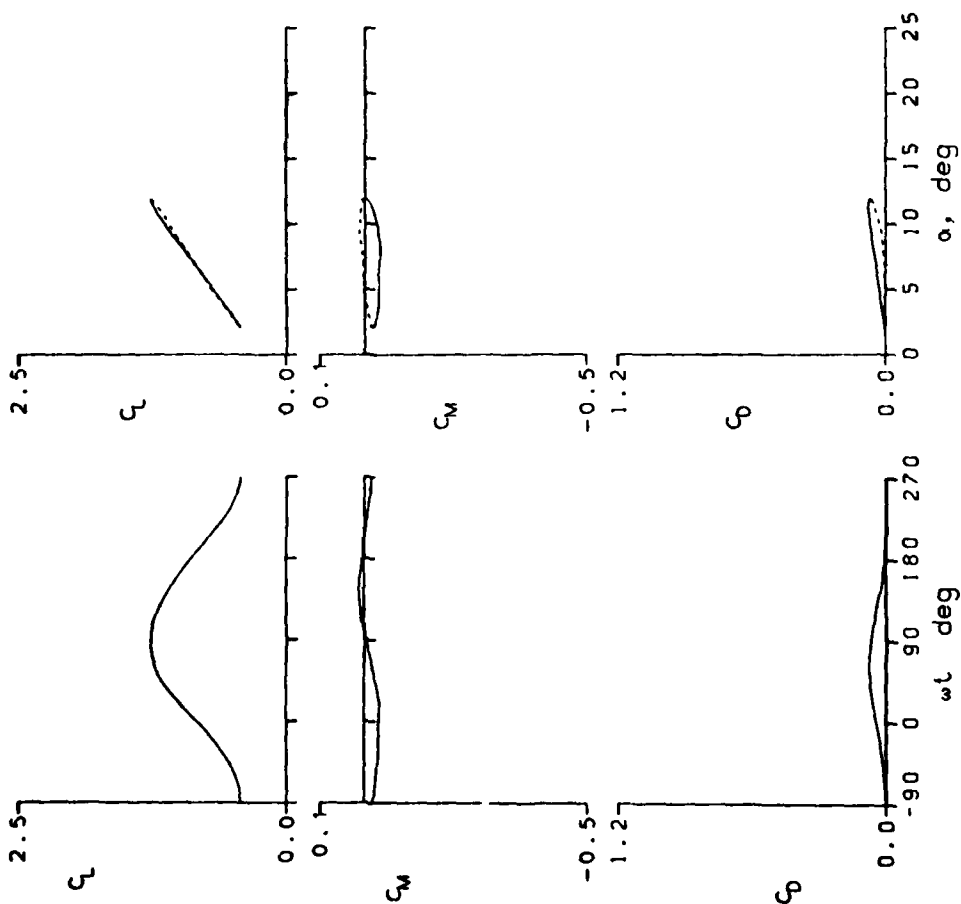


Figure 18.- Continued.

NLR-1 AIRFOIL
 FRAME : 65309 $A_0 = 6.96^\circ$ $\mu = 0.010$
 $Re = 3.89 \text{ E}6$ $A_1 = 4.89^\circ$ $M = 0.301$
 $C_{L_{max}} = 1.30$ $C_{M_{min}} = -0.02$ $C_{D_{max}} = 0.06$
 $\alpha_{L_{max}} = 11.8^\circ$ $\zeta = 0.032$ $M_{max} = 1.117$
 $\alpha_{C_{min}} = 6.8^\circ$ $-C_{P_{max}} = 8.1$ $\alpha_{M_{max}} = 11.9^\circ$

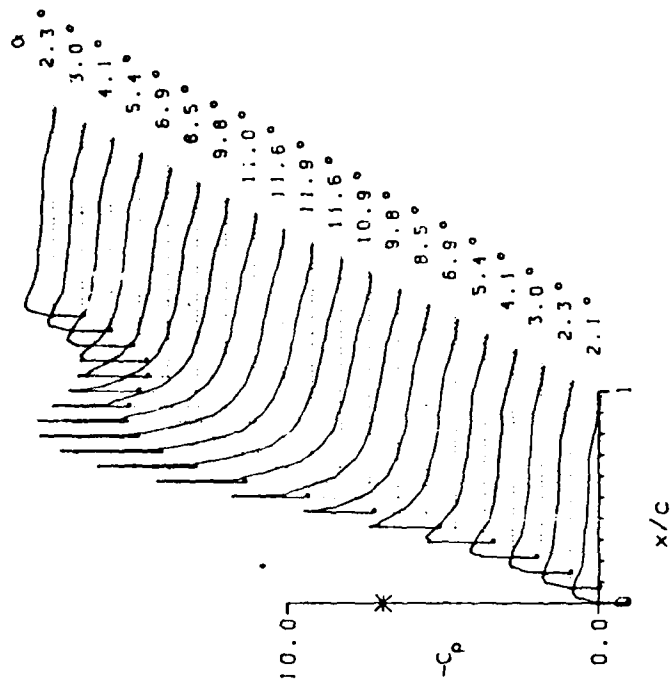
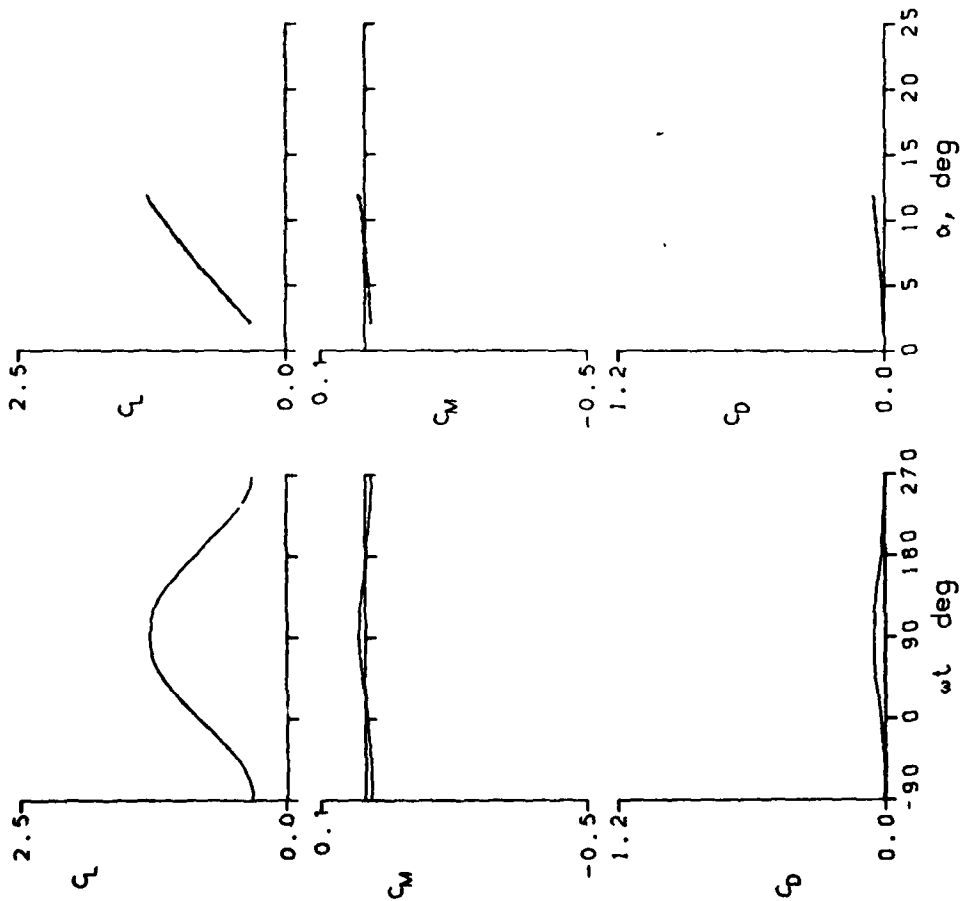


Figure 18.- Continued.

NLR-1 AIRFOIL

FRAME : 65311	A0 = 6.98°	k = 0.197
Re = 3.86 E6	A1 = 4.90°	M = 0.301
CLmax = 1.38	CMmin = -0.04	CDmax = 0.07
αLmax = 11.9°	ξ = 0.616	Mmax = 1.176
αCMmin = 6.8°	-CDmax = 8.6	αMmax = 11.8°

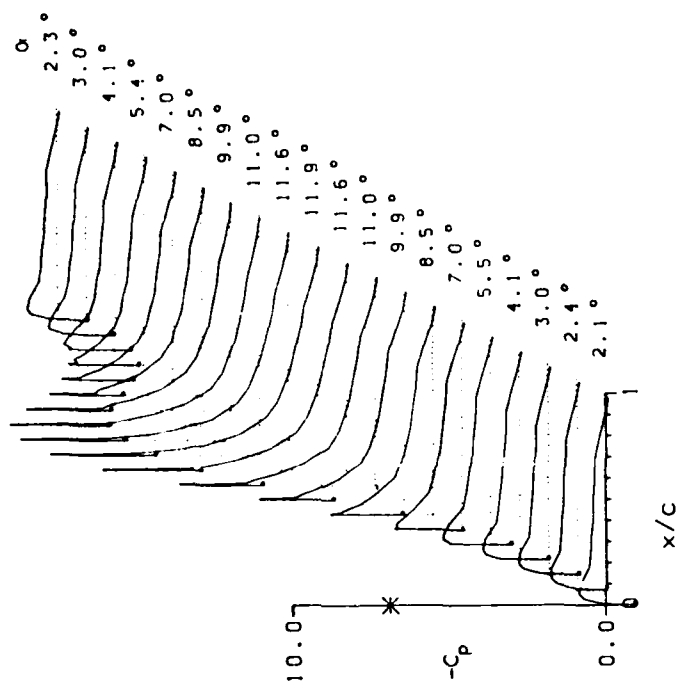
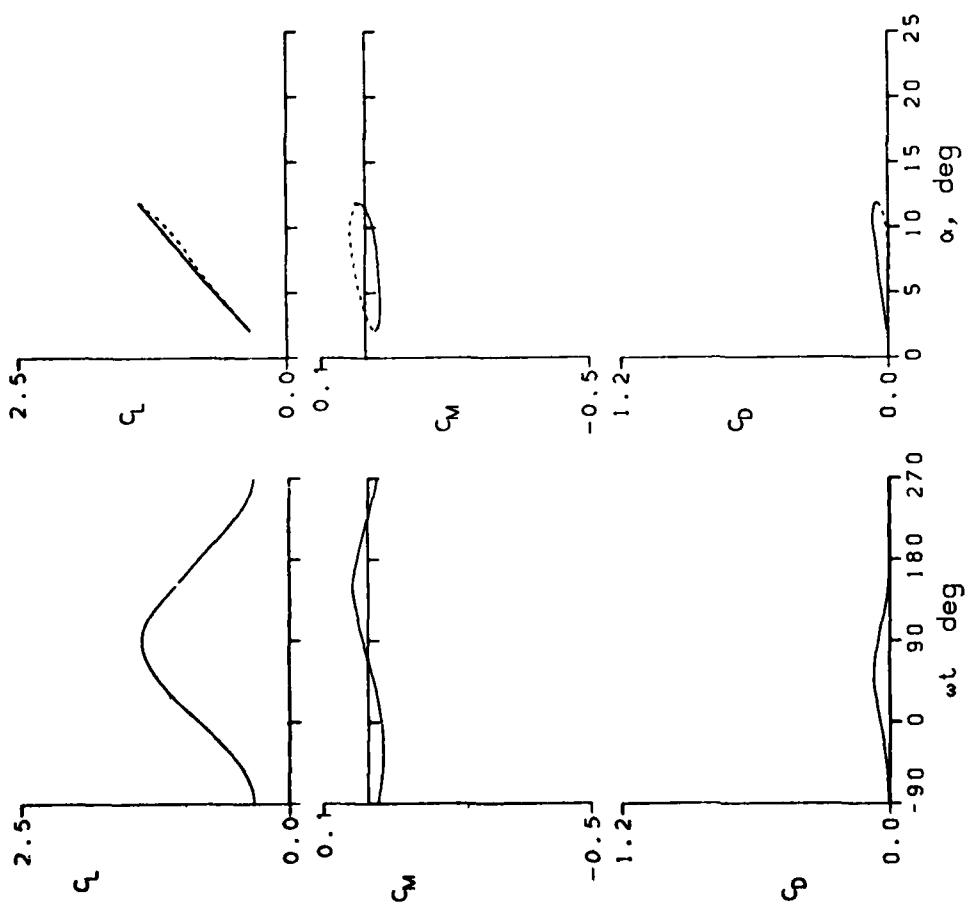


Figure 18.- Concluded.

NLR-7301 AIRFOIL

FRATE : 67019	A0 = 14.79°	μ = 0.025
Re = 2.44 E6	A1 = 9.90°	M = 0.183
CLmax = 1.93	CMmin = -0.26	CDmax = 0.49
αLmax = 19.2°	ξ = 0.097	Mmax = 0.622
αCMmin = 14.2°	-CDmax = 9.0	αMmax = 18.3°

TRIP

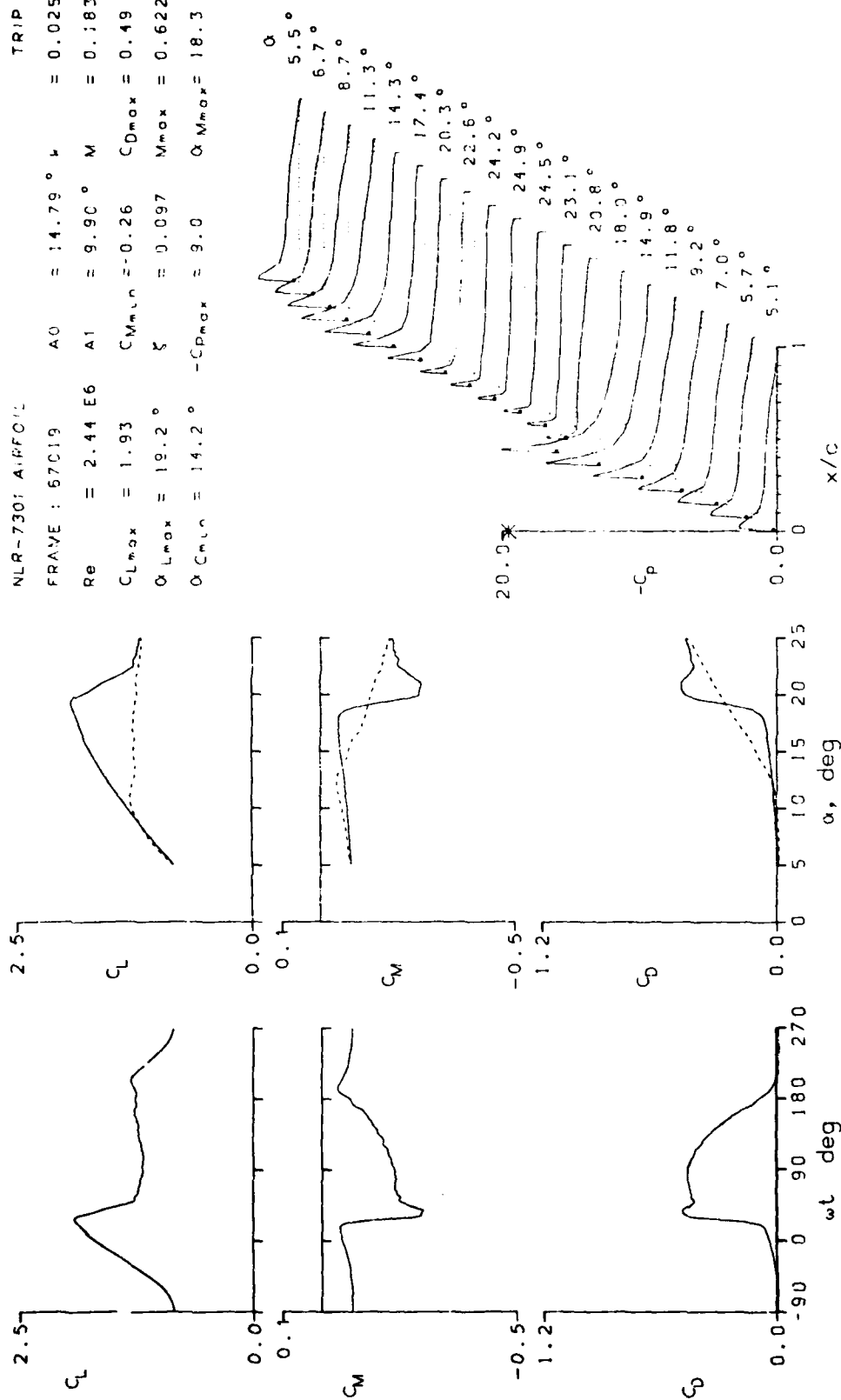


Figure 19.- Dynamic data for NLR-7301 airfoil.

NLR-7301 AIRFOIL TRIP

FRAME : 6702: A0 = 14.80° k = 0.099

Re = 2.43 E6 A1 = 9.90° M = 0.184

C_{Lmax} = 2.3: C_{Mmin} = -0.49 C_{Dmax} = 0.91

α_{Lmax} = 24.1° ξ = 0.060 M_{max} = 0.697

α_{Cmin} = 14.2° -C_{Dmax} = 11.0 α_{Mmax} = 21.8°

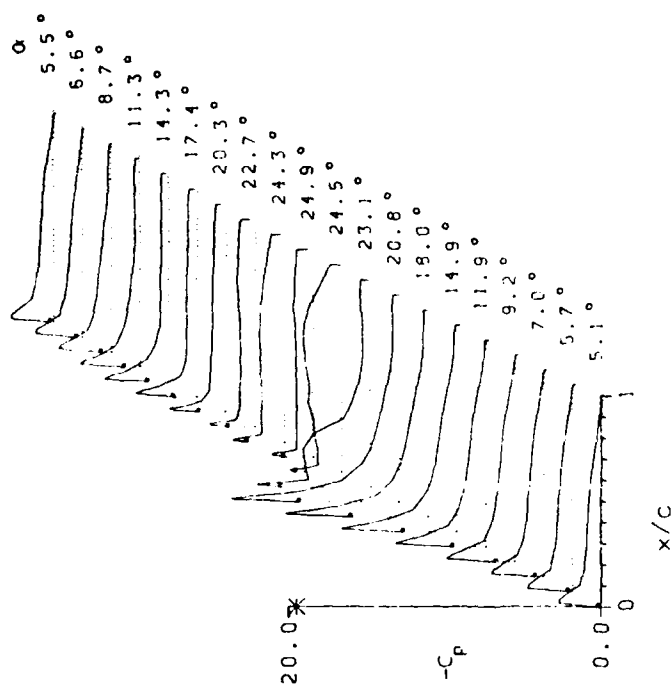
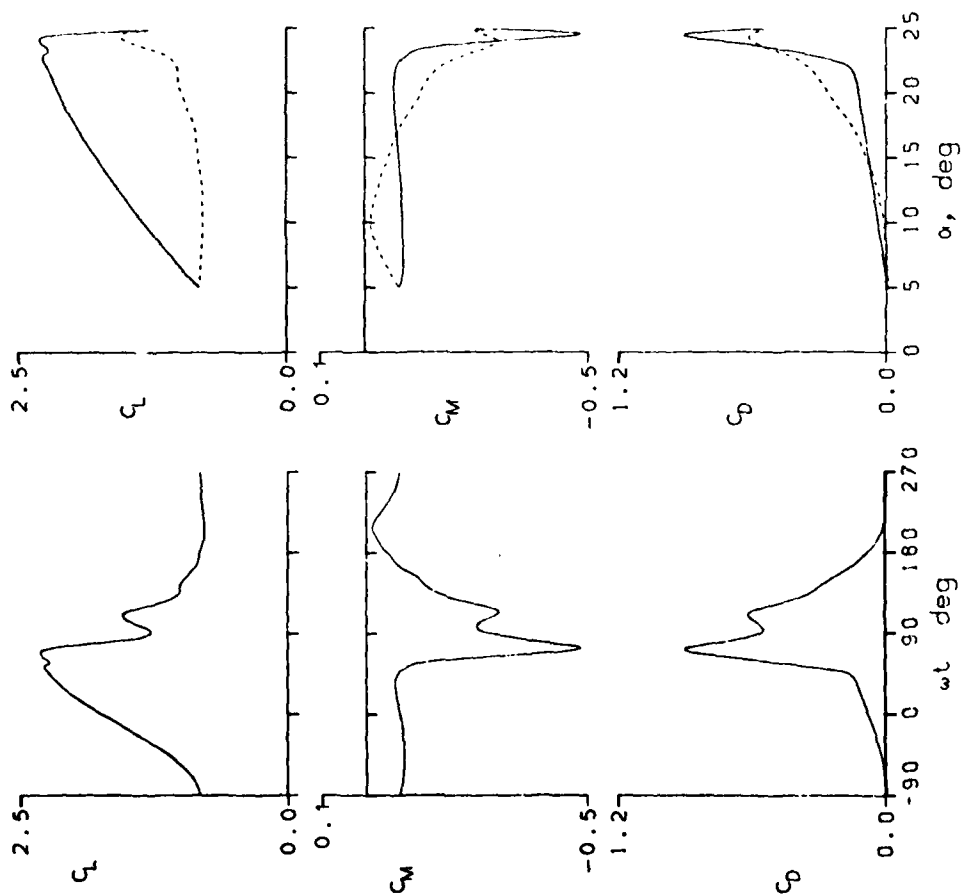


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67023	A0 = 14.79°	k = 0.198
Re = 2.43 E6	A1 = 9.90°	M = 0.183
C _{Lmax} = 2.44	C _{Mmin} = -0.50	C _{Dmax} = 0.94
α _{Lmax} = 24.2°	ξ = -0.289	M _{max} = 0.719
α _{Cmin} = 14.3°	-C _{pmax} = 11.7	α _{Mmax} = 22.9°

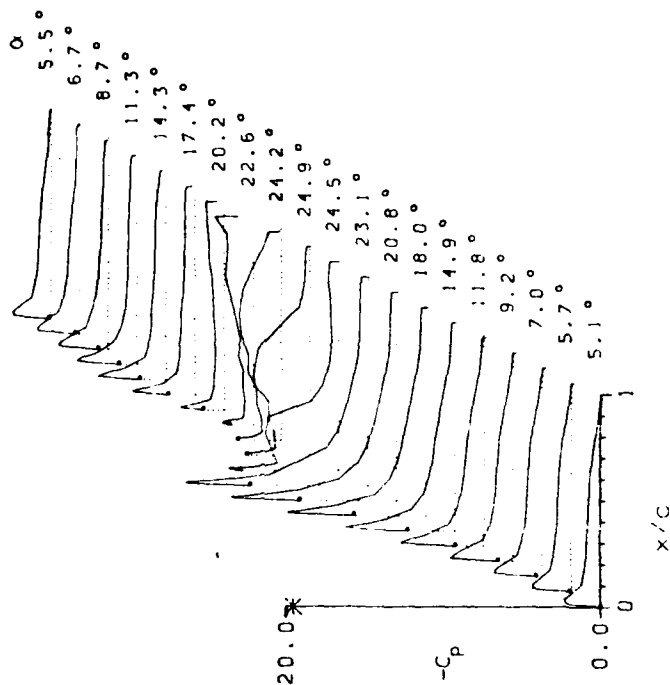
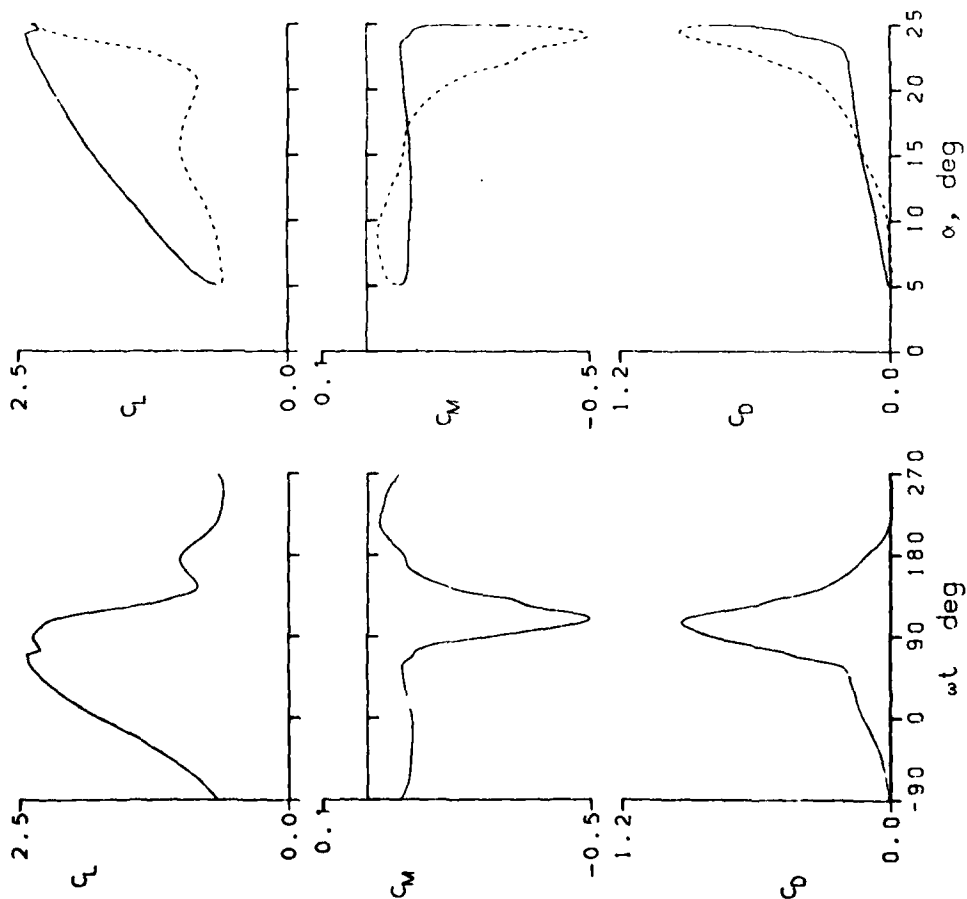


Figure 19.- Continued.

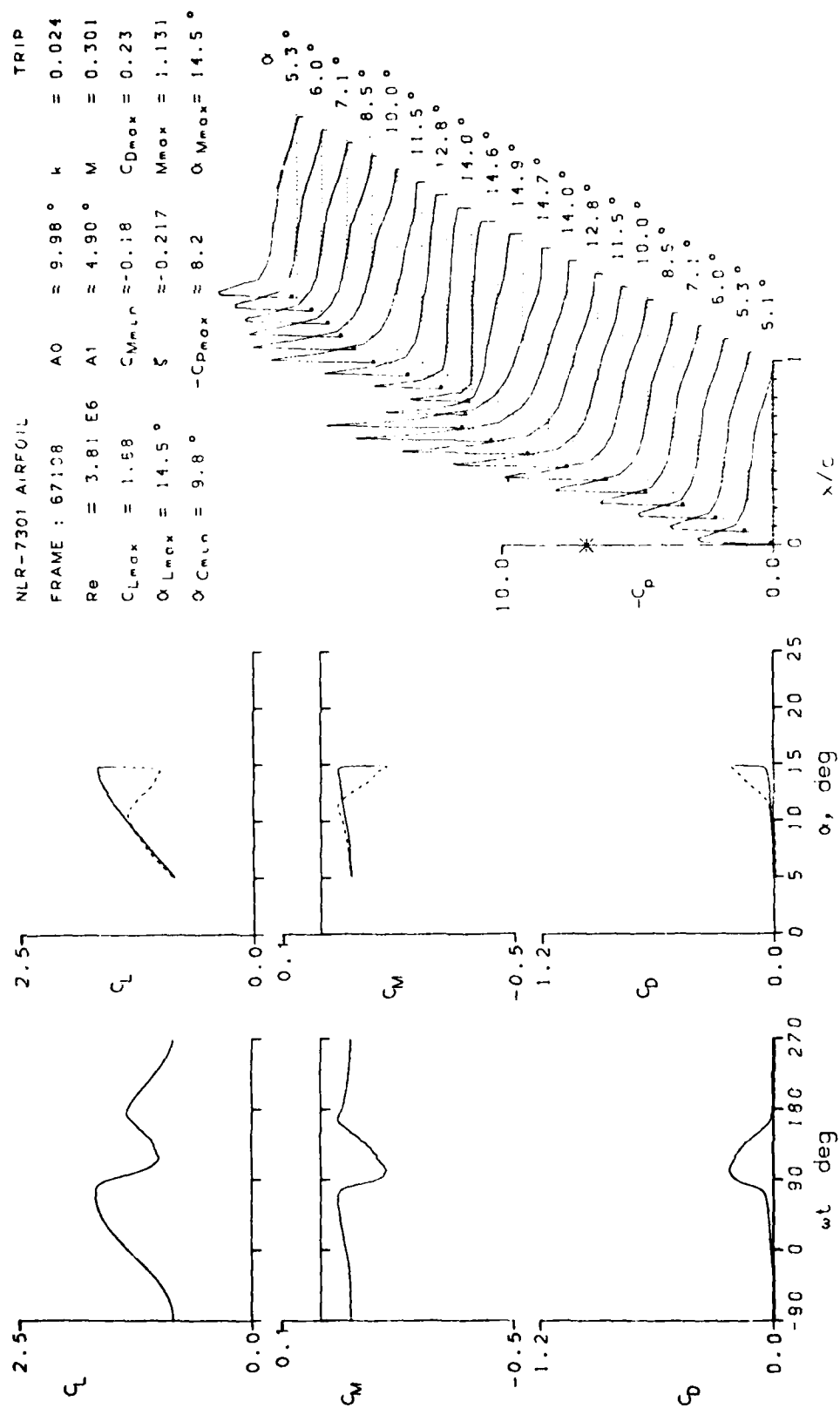


Figure 19.- Continued.

NLR-7301 AIRFOIL TRIP

FRAME : 67110 A0 = 9.98° k = 0.049

Re = 3.75 E6 A1 = 4.90° M = 0.298

C_{Lmax} = 1.72 C_{Mmin} = -0.16 C_{Dmax} = 0.19

α_{Lmax} = 14.7° ζ = -0.158 M_{max} = 1.143

α_{Cmin} = 9.8° $-C_{pmax}$ = 8.5 α_{Mmax} = 14.9°

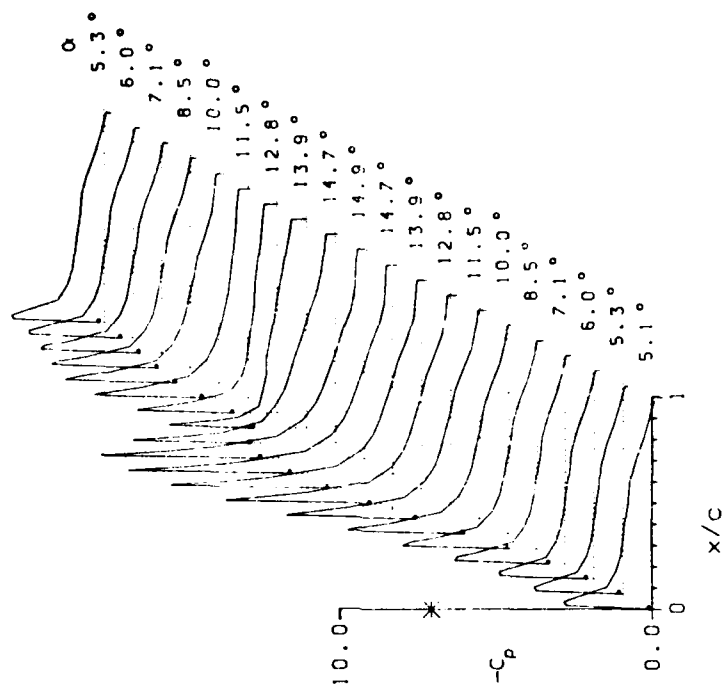
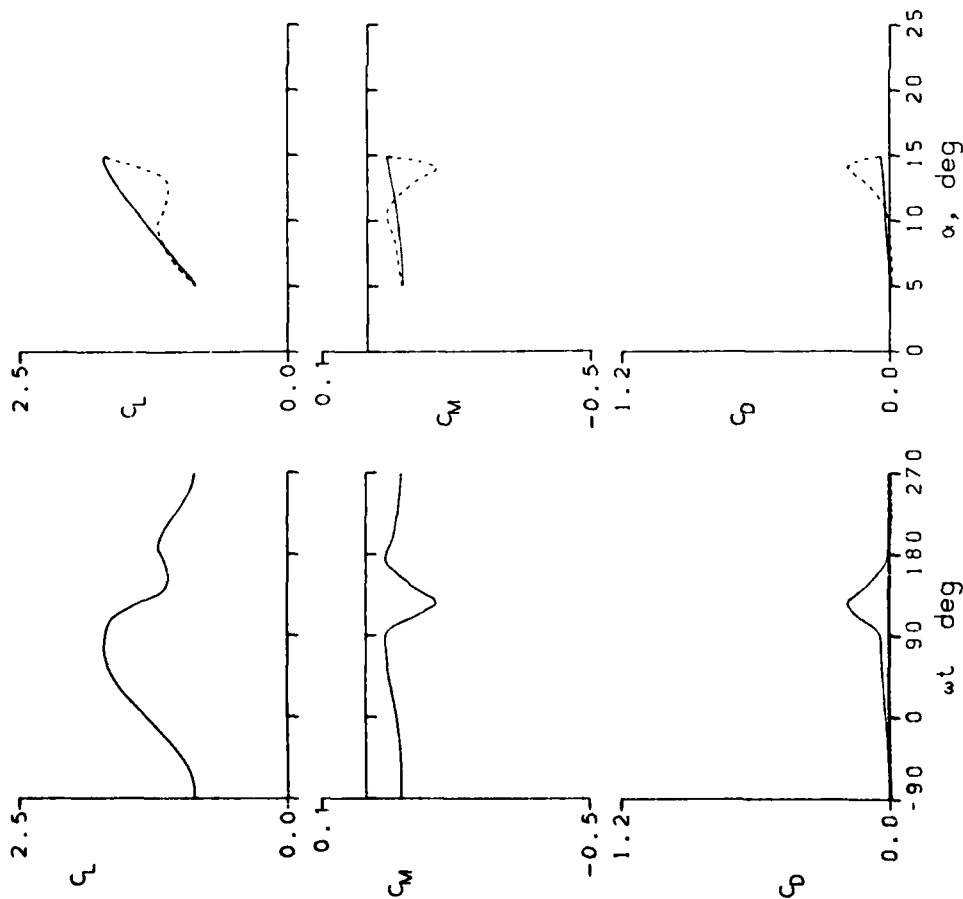


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRATE : 57112	AO = 9.97°	k = 0.099
Re = 3.74 E6	A1 = 4.90°	M = 0.298
CLmax = 1.75	CMmin = -0.03	CDmax = 0.04
αLmax = 14.8°	ξ = 0.193	Mmax = 1.162
αCMmin = 9.8°	-CDmax = 8.7	αVmax = 14.9°

TRIP

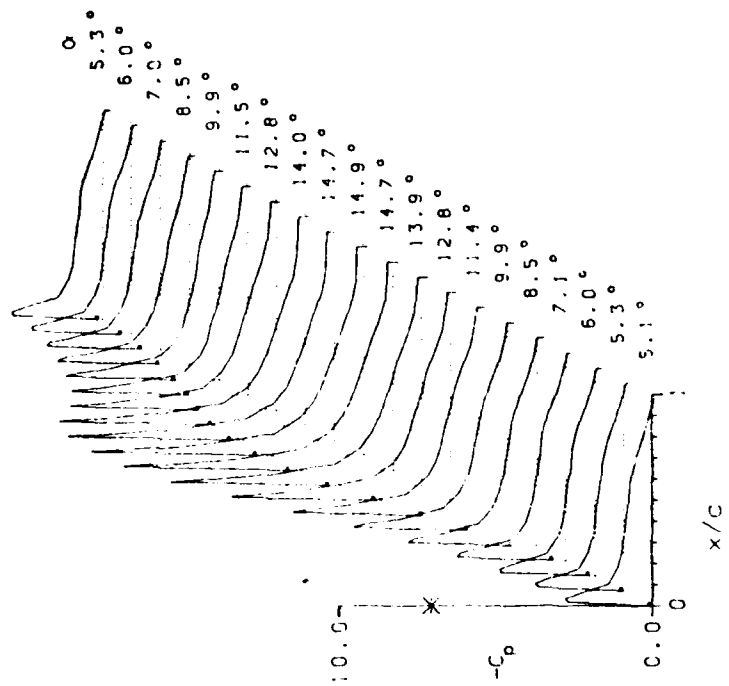
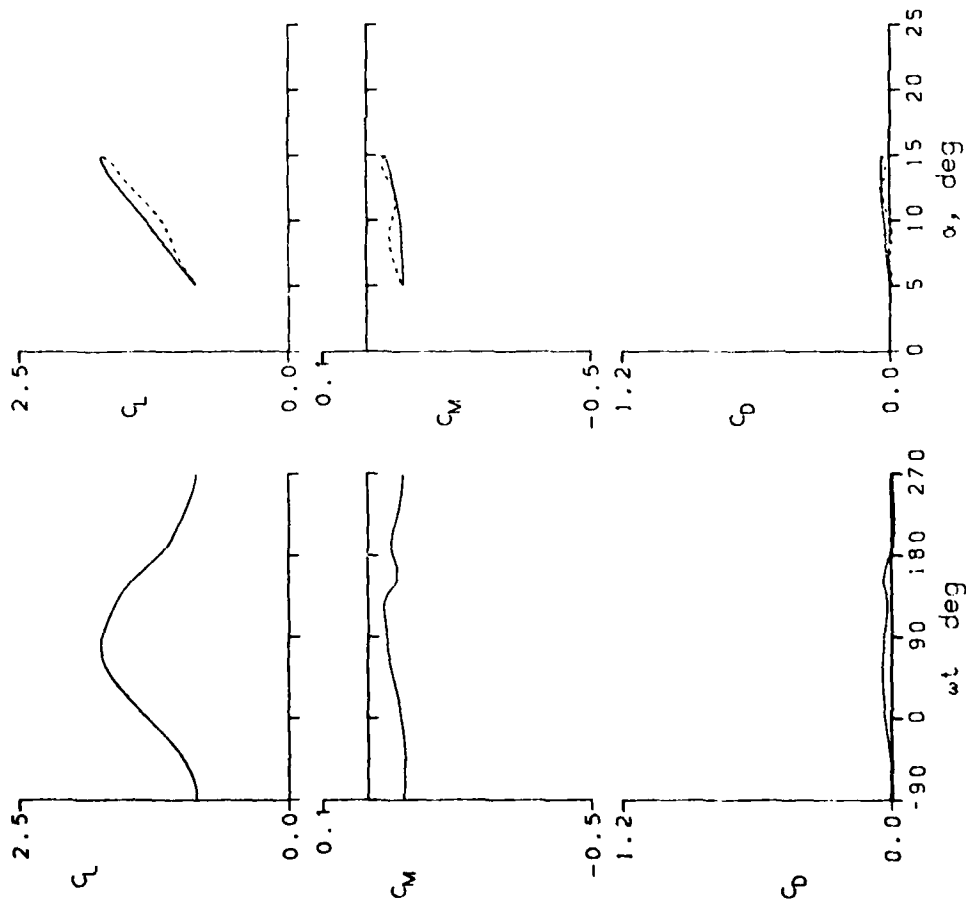


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67120	$A_0 = 14.79^\circ$	$\mu = 0.099$
$Re = 1.48 \text{ E}6$	$A_1 = 9.90^\circ$	$M = 0.110$
$C_{Lmax} = 2.31$	$C_{Mmin} = -0.37$	$C_{Dmax} = 0.82$
$\alpha_{Lmax} = 24.7^\circ$	$\xi = -0.221$	$M_{max} = 0.395$
$\alpha_{Cmin} = 14.2^\circ$	$-C_{Dmax} = 11.2$	$\alpha_{Mmax} = 23.4^\circ$

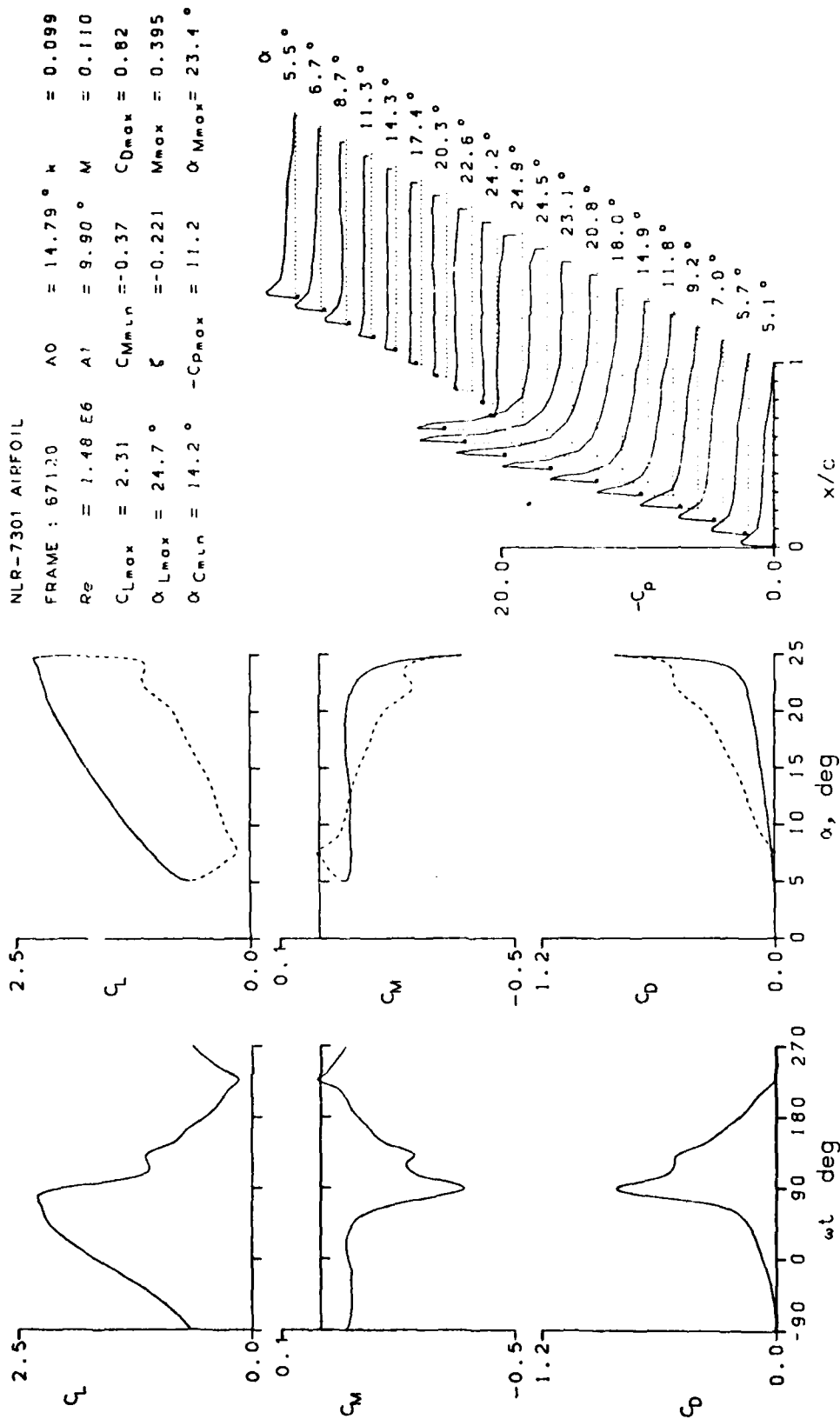


Figure 19.- Continued.

NLR-730' AIRFOIL

FRAME : 57201	A0	= 9.80 °	k	= 0.099	
Re	= 1.48 E6	A1	= 9.90 °	M	= 0.110
C _{Lmax}	= 1.99	C _{Mmin}	= -0.09	C _{Dmax}	= 0.09
α _{Lmax}	= 19.6 °	ξ	= 0.227	M _{max}	= 0.368
α _{Cmin}	= 9.3 °	-C _{Dmax}	= 9.7	α _{Mmax}	= 19.8 °

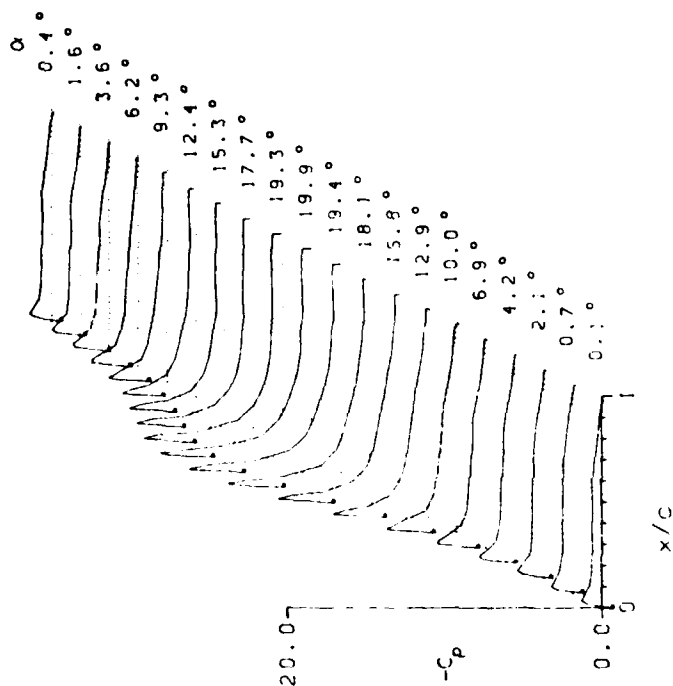
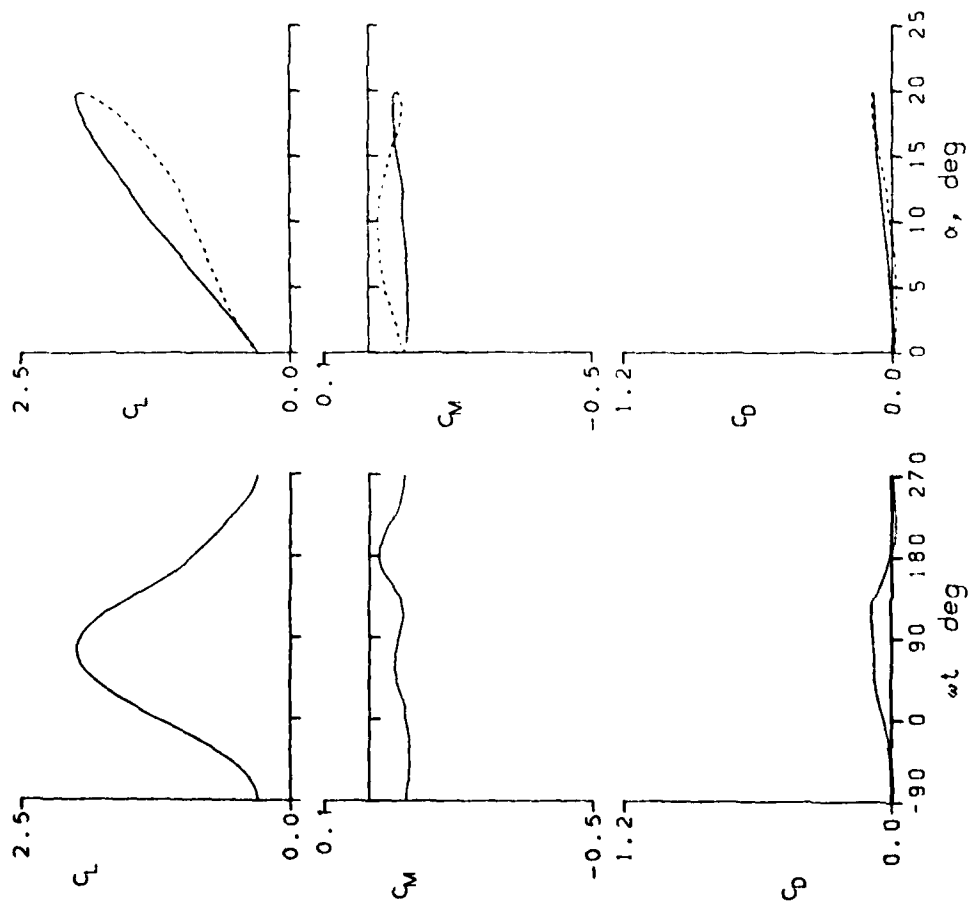


Figure 19.- Continued.

NLR-7301 AIRFOIL
 FRAME : 67208 $A_0 = 9.81^\circ$ $k = 0.025$
 $Re = 2.46 E6$ $A_1 = 9.90^\circ$ $M = 0.184$
 $C_{Lmax} = 1.90$ $C_{Mmin} = -0.12$ $C_{Dmax} = 0.18$
 $\alpha_{Lmax} = 19.2^\circ$ $\zeta = 0.002$ $M_{max} = 0.639$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 9.3$ $\alpha_{Mmax} = 19.4^\circ$

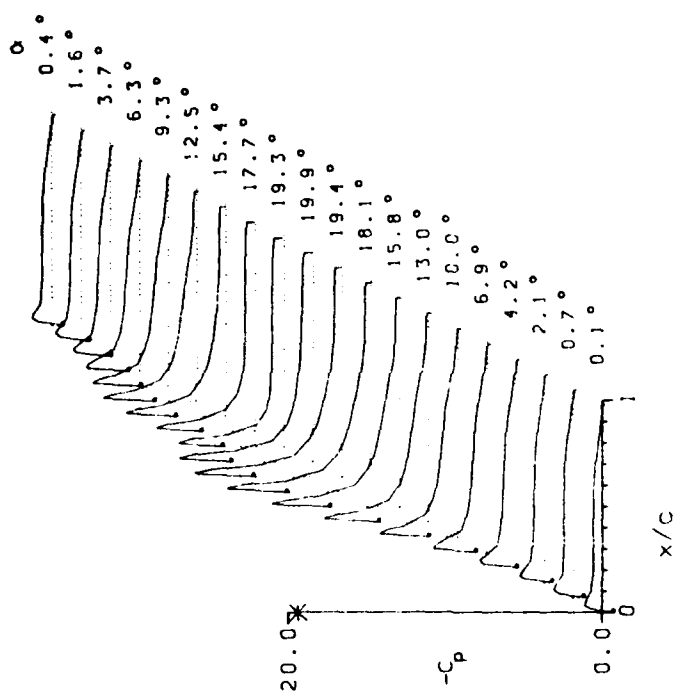
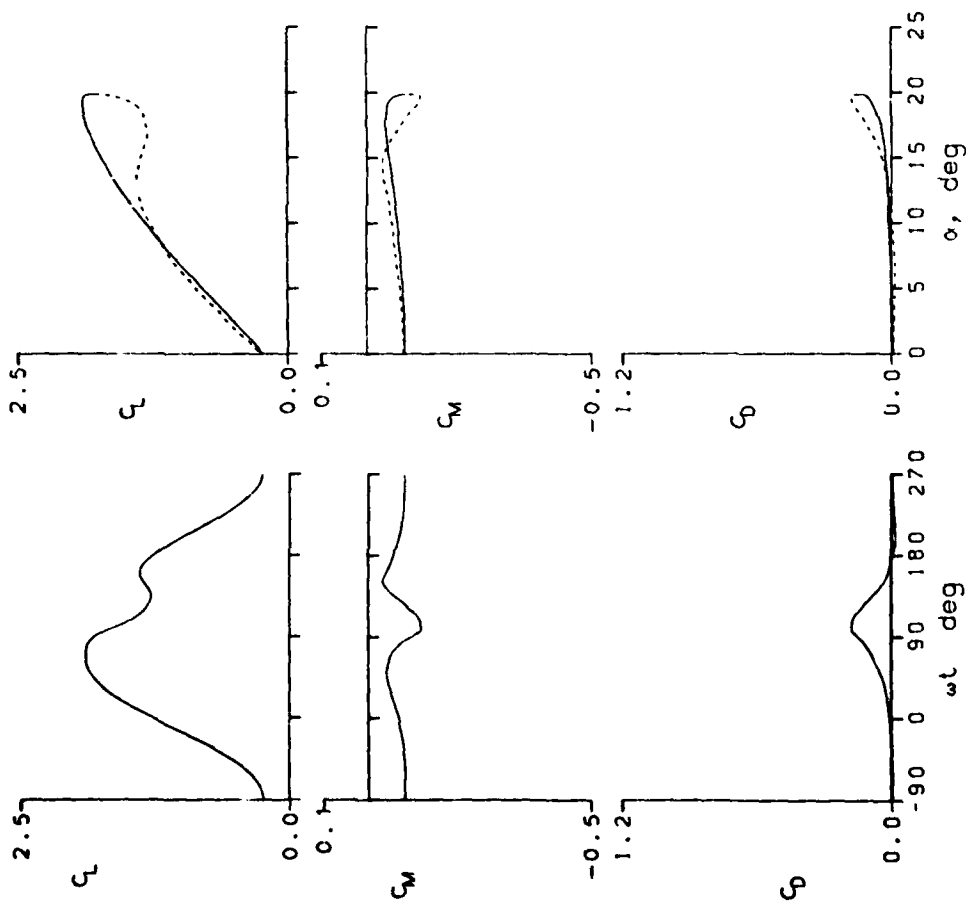


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67210	A0 = 9.80 °	k = 0.099
Re = 2.46 E6	A1 = 9.90 °	M = 0.185
C _{Lmax} = 2.10	C _{Mmin} = -0.10	C _{Dmax} = 0.08
α _{Lmax} = 19.6 °	ξ = 0.237	M _{max} = 0.685
α _{Cmin} = 9.3 °	-C _{Dmax} = 10.6	α _{Mmax} = 19.8 °

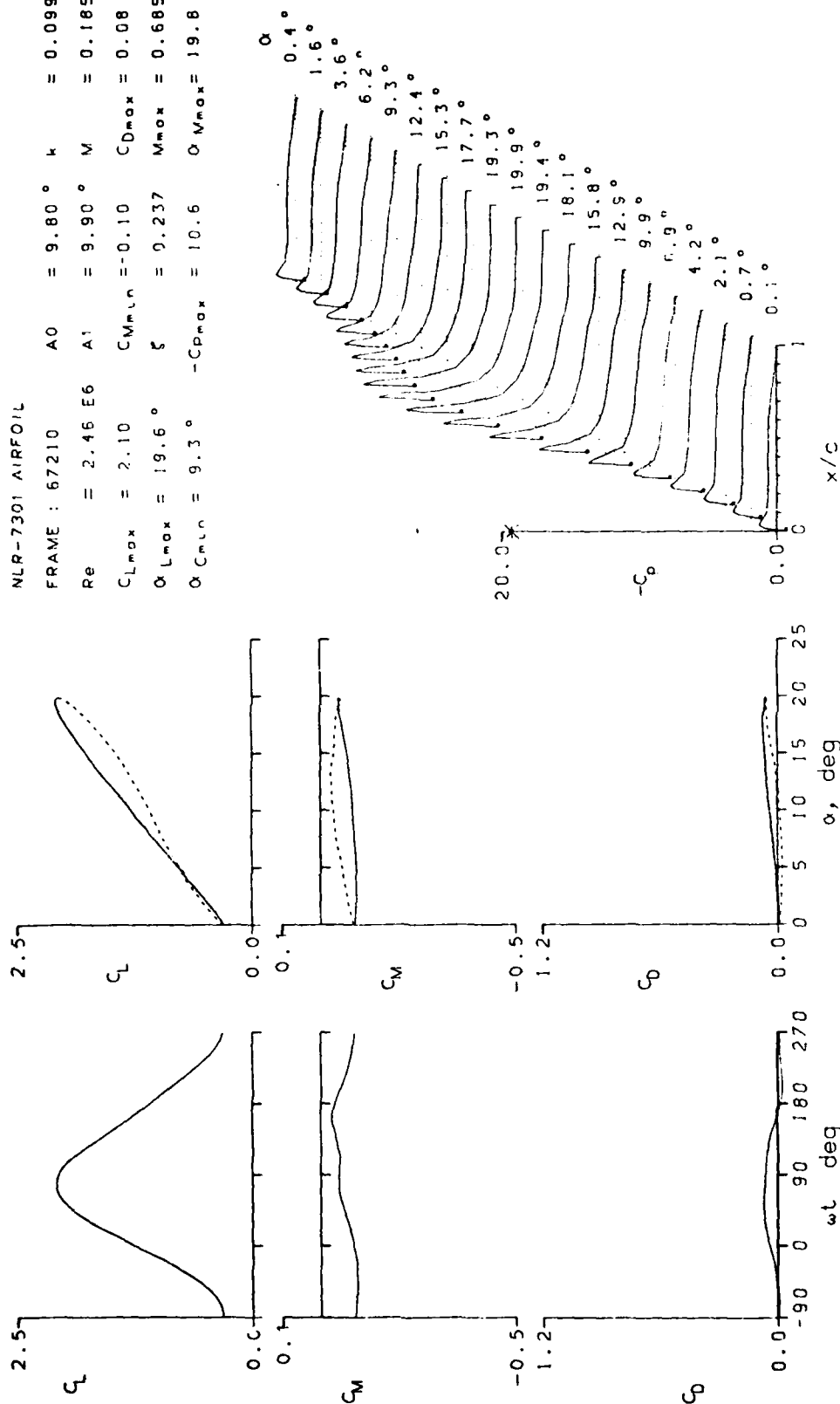


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67212	A0 = 9.79 °	k = 0.198
Re = 2.45 E6	A1 = 9.90 °	M = 0.184
C _{Lmax} = 2.15	C _{Mmin} = -0.12	C _{Dmax} = 0.12
α _{Lmax} = 19.7 °	ξ = 0.533	M _{max} = 1.697
α _{Cmin} = 9.3 °	-C _{pmax} = 10.9	α _{Mmax} = 19.9 °

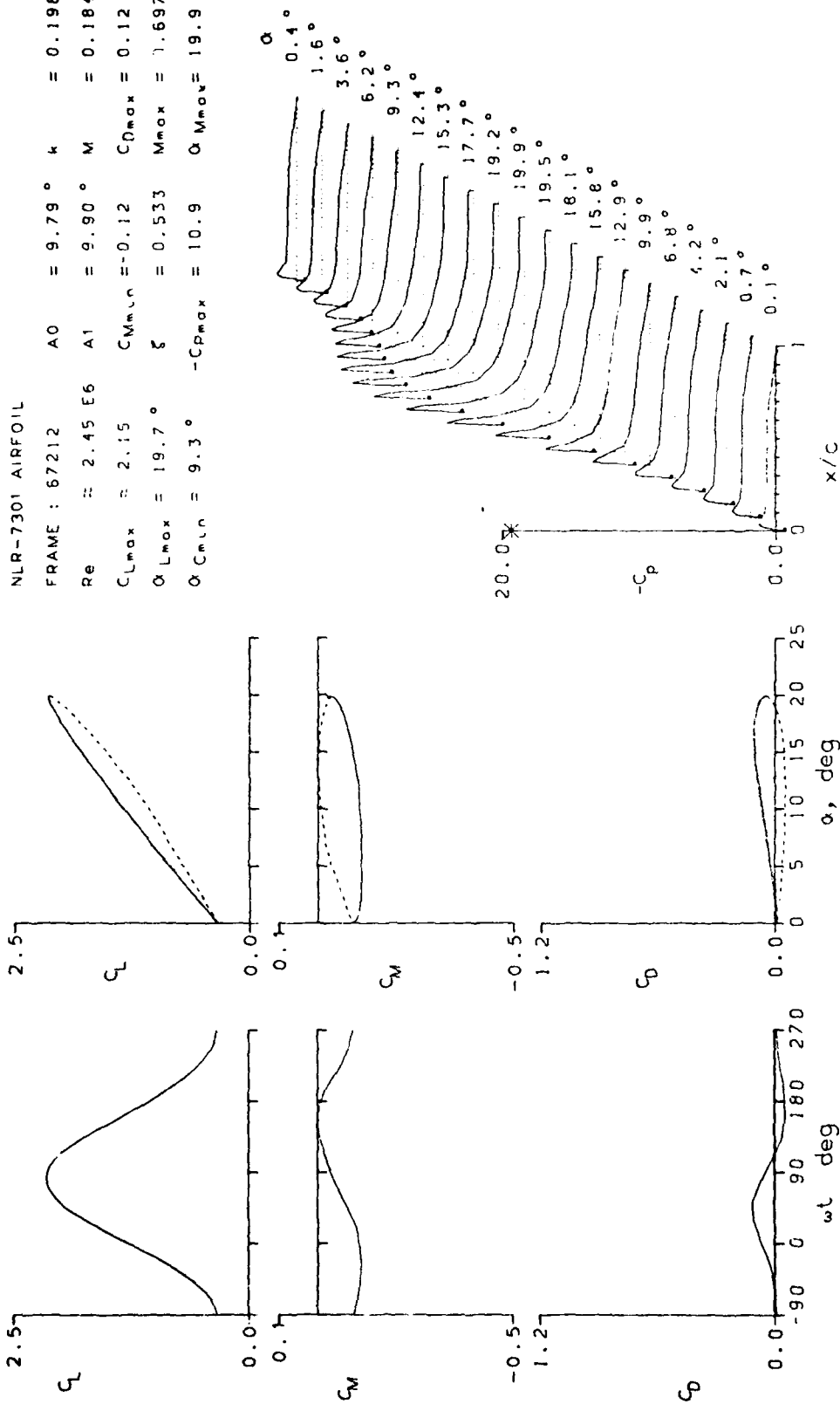


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 57218	AO = 14.79°	μ = 0.025
Re = 2.45 E6	A1 = 9.90°	M = 0.184
C _{Lmax} = 2.01	C _{Mmin} = -0.26	C _{Dmax} = 0.54
α _{Lmax} = 21.1°	ξ = -0.214	M _{max} = 0.663
α _{Cmin} = 14.3°	-C _{Dmax} = 10.0	α _{Mmax} = 21.1°

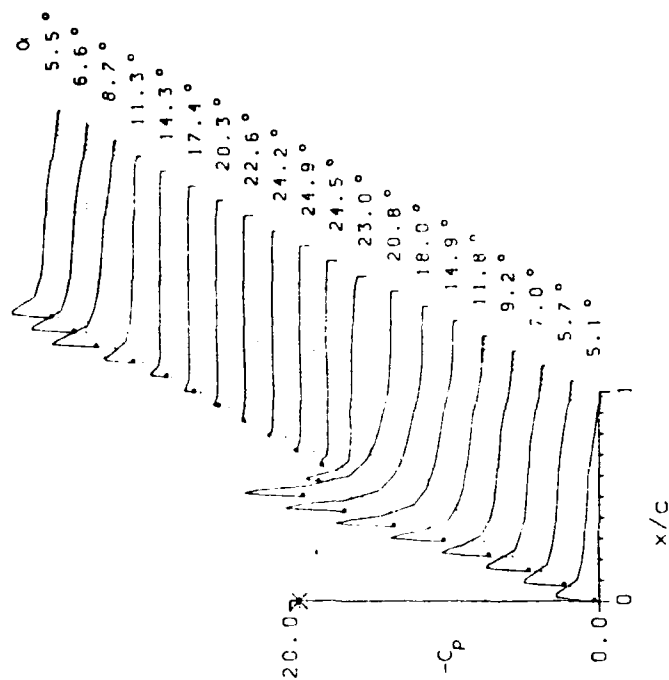
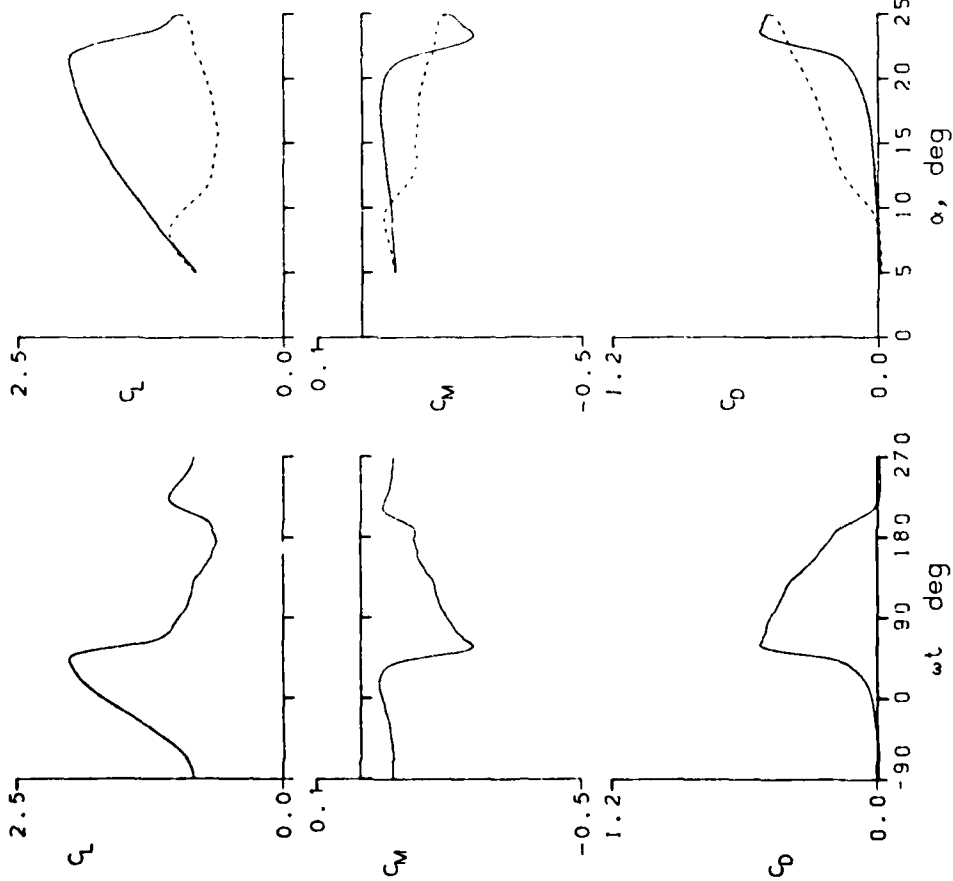


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67220	A0 = 14.80°	k = 0.099
Re = 2.45 E6	A1 = 9.90°	M = 0.184
CLmax = 2.36	CMmin = -0.31	CDmax = 0.65
αLmax = 24.3°	ξ = -0.384	Mmax = 0.755
αCMmin = 14.2°	-CPmax = 12.5	αMmax = 23.9°

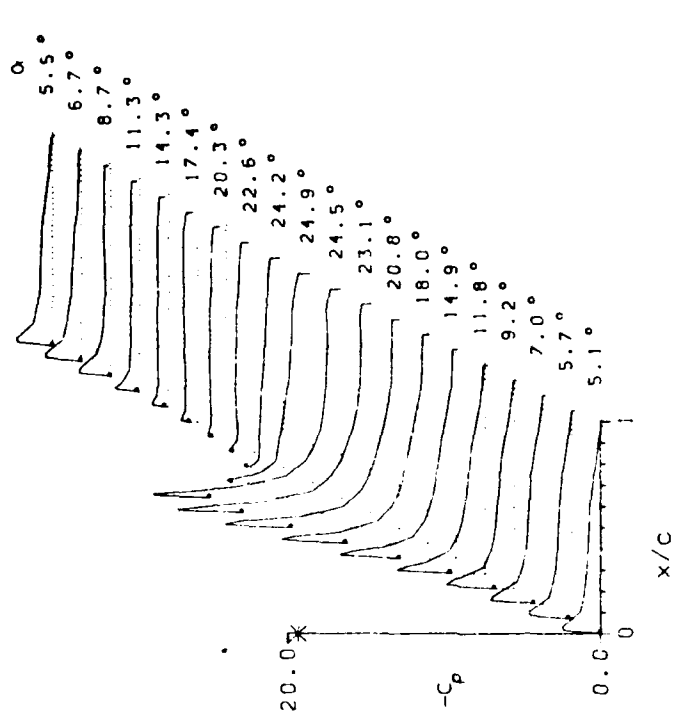
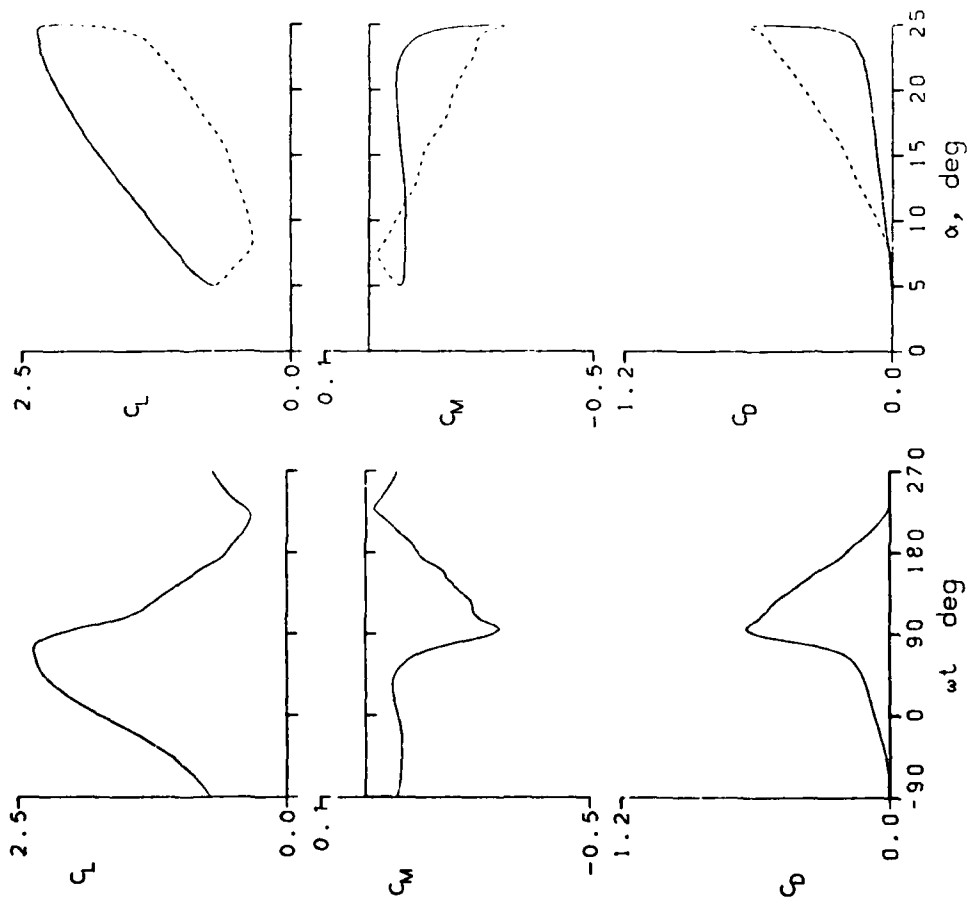


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67222	A0 = 14.78°	μ = 0.198
Re = 2.45 E6	A1 = 9.91°	M = 0.184
CLmax = 2.48	CMmin = -0.25	CDmax = 0.35
αLmax = 24.5°	ξ = -0.239	Mmax = 0.805
αCMmin = 14.3°	-CDmax = 13.9	αMmax = 24.9°

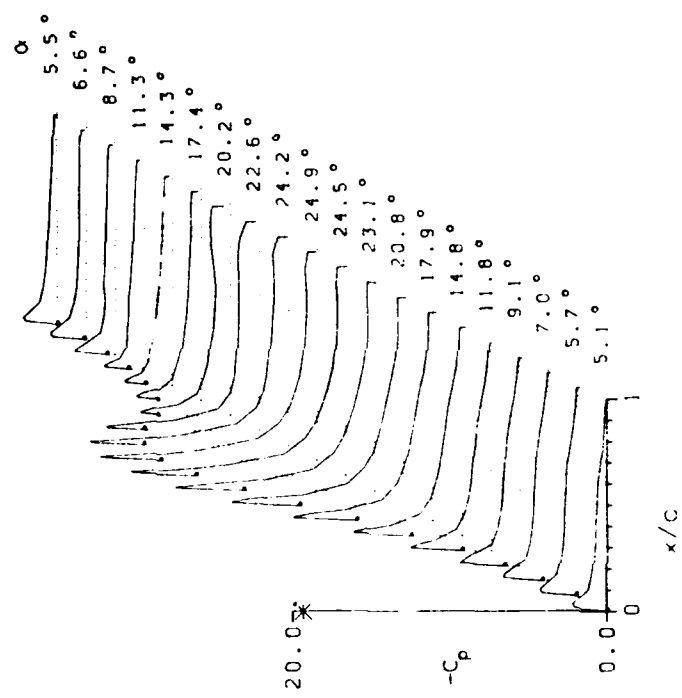
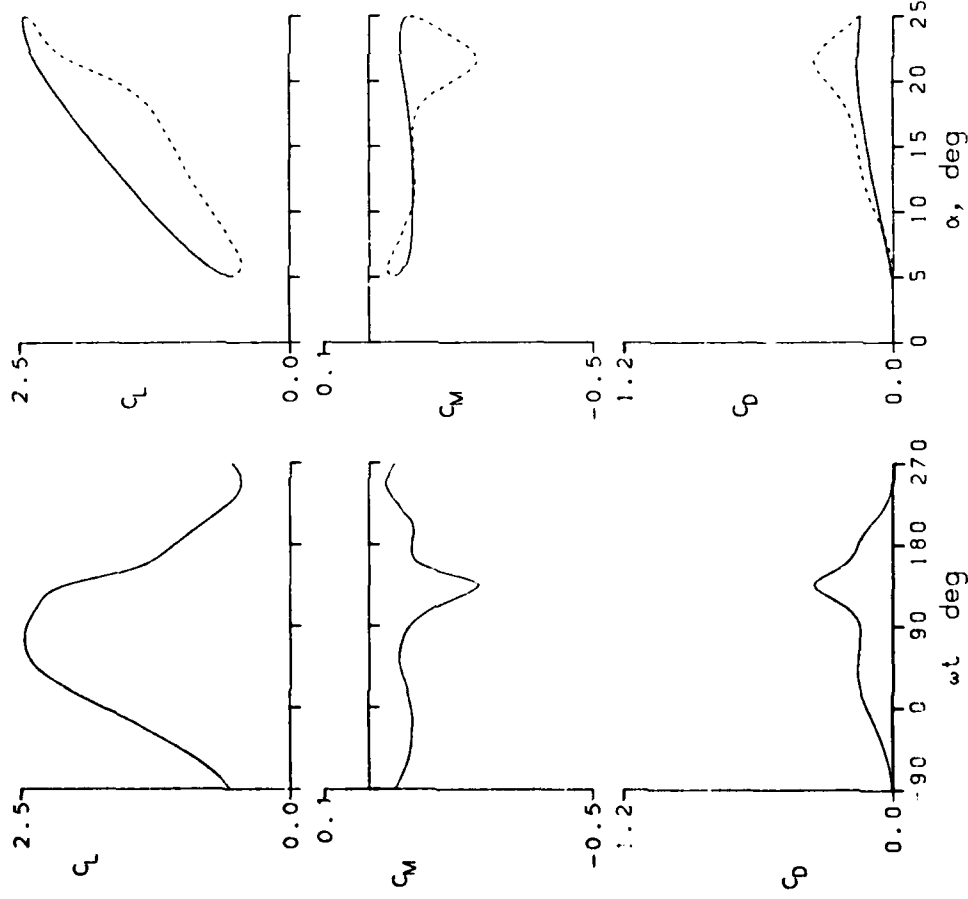


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67305	A0 = 14.81°	h = 0.099
Re = 3.25 E6	A1 = 9.90°	M = 0.248
C _{Lmax} = 2.37	C _{Mmin} = -0.38	C _{Dmax} = 0.65
α _{Lmax} = 24.3°	ζ = -0.244	M _{max} = 1.206
α _{Cmin} = 14.3°	-C _{Dmax} = 13.3	α _{Mmax} = 22.7°

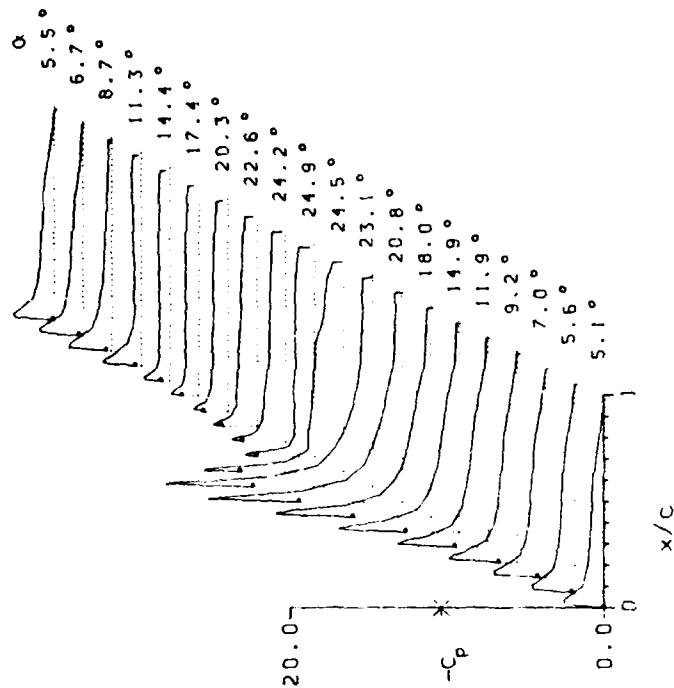
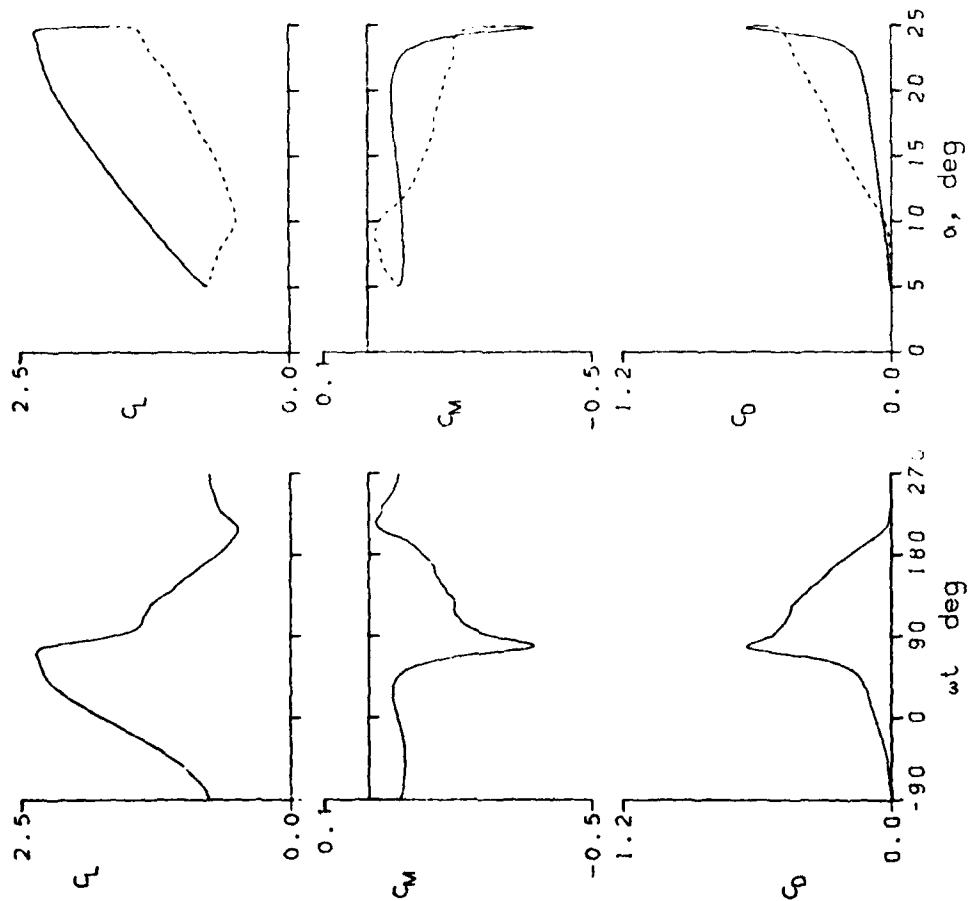


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 67310	A0 = 9.81°	k = 0.099
R0 = 3.26 E6	A1 = 9.90°	M = 0.250
CLmax = 2.13	CMmin = -0.10	CDmax = 0.08
αLmax = 19.4°	ξ = 0.228	Mmax = 1.101
αCMmin = 9.3°	-CPmax = 11.8	αMmax = 19.8°

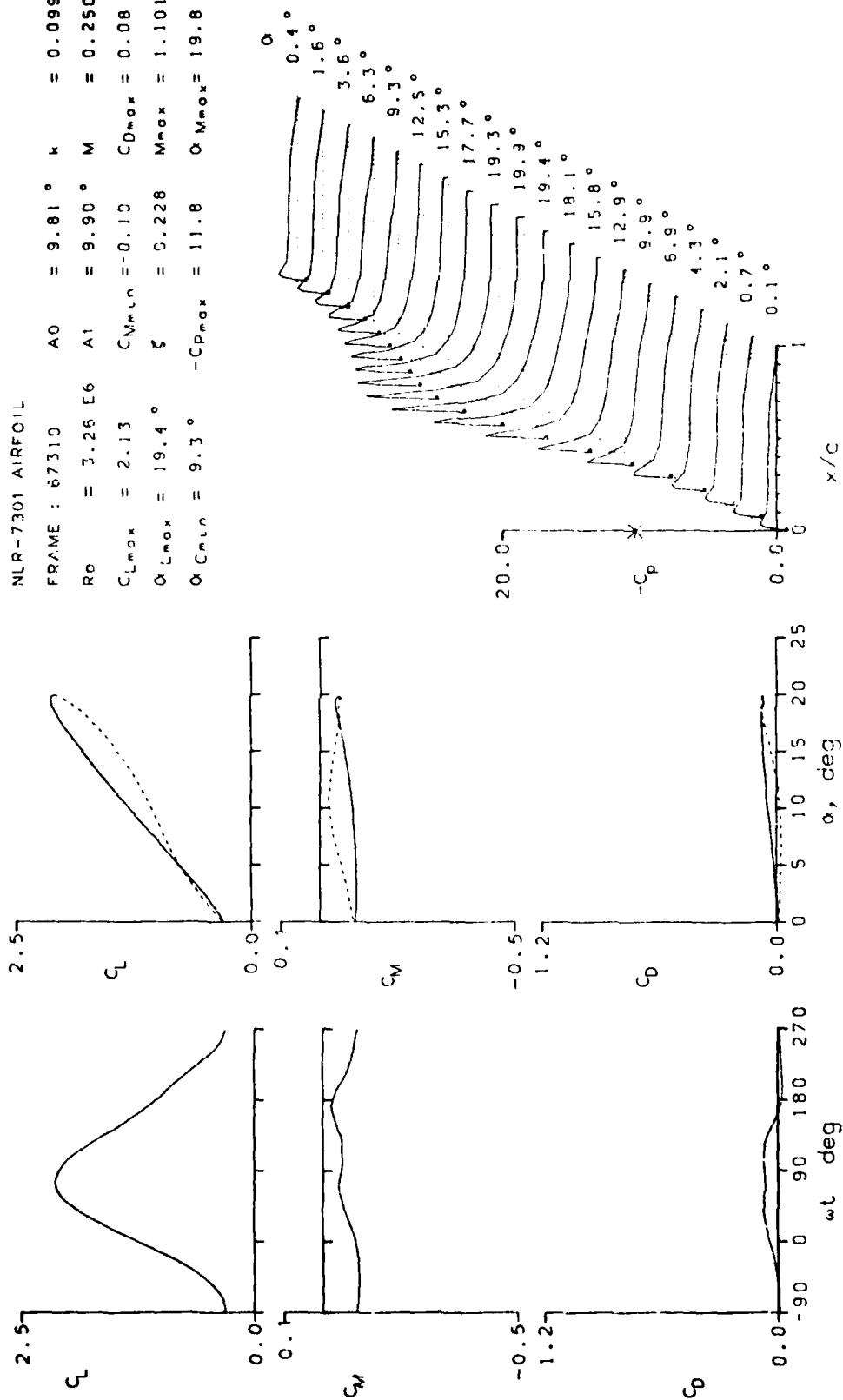


Figure 19.- Continued.

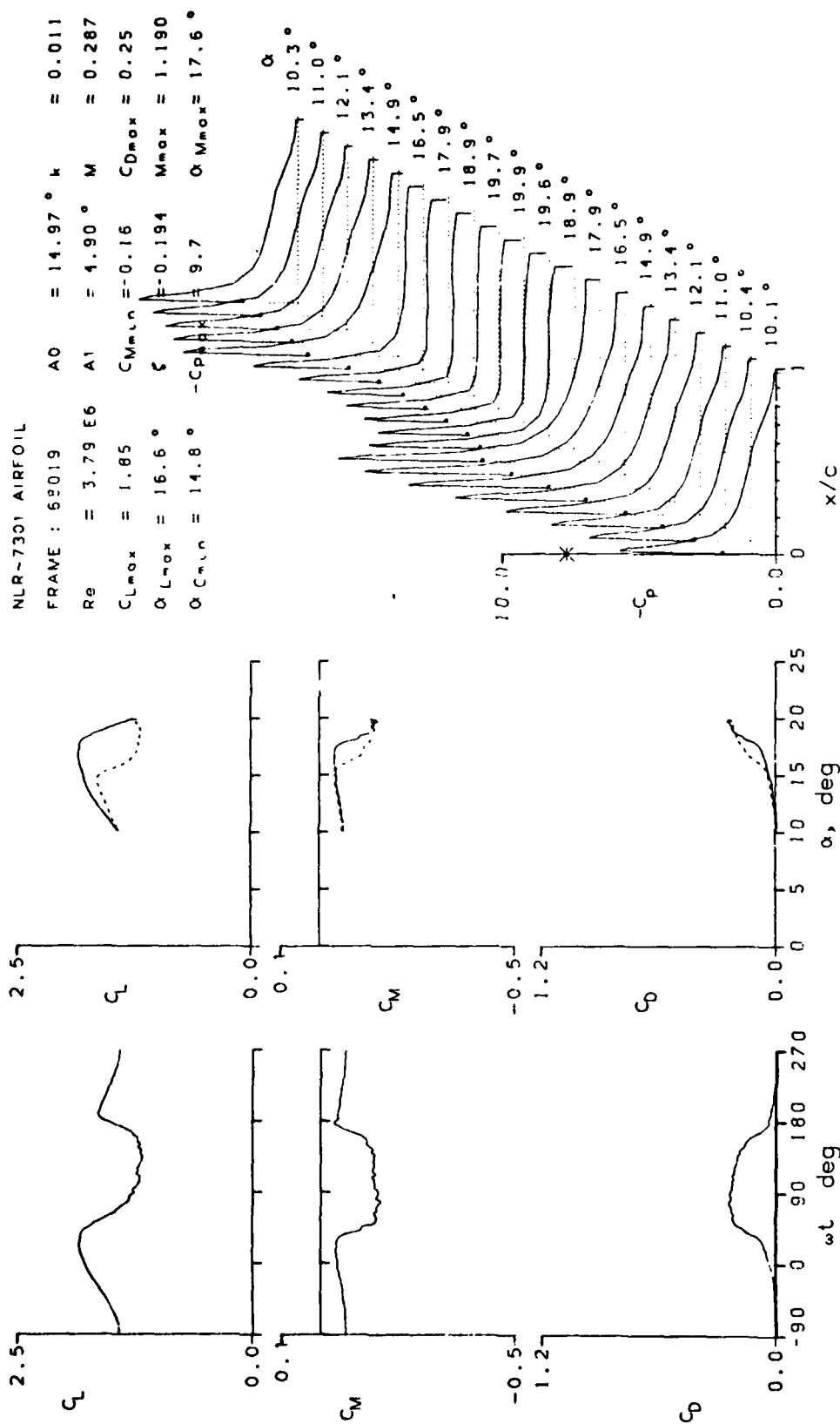


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 58100 $A_0 = 14.97^\circ$ $k = 0.026$

$Re = 3.77 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.288$

$C_{Lmax} = 1.84$ $C_{Mmin} = -0.16$ $C_{Dmax} = 0.27$

$\alpha_{Lmax} = 17.5^\circ$ $\xi = 9.7$ $M_{max} = 1.193$

$\alpha_{Cmin} = 14.8^\circ$ $-C_{Pmax} = 9.7$ $\alpha_{Mmax} = 18.0^\circ$

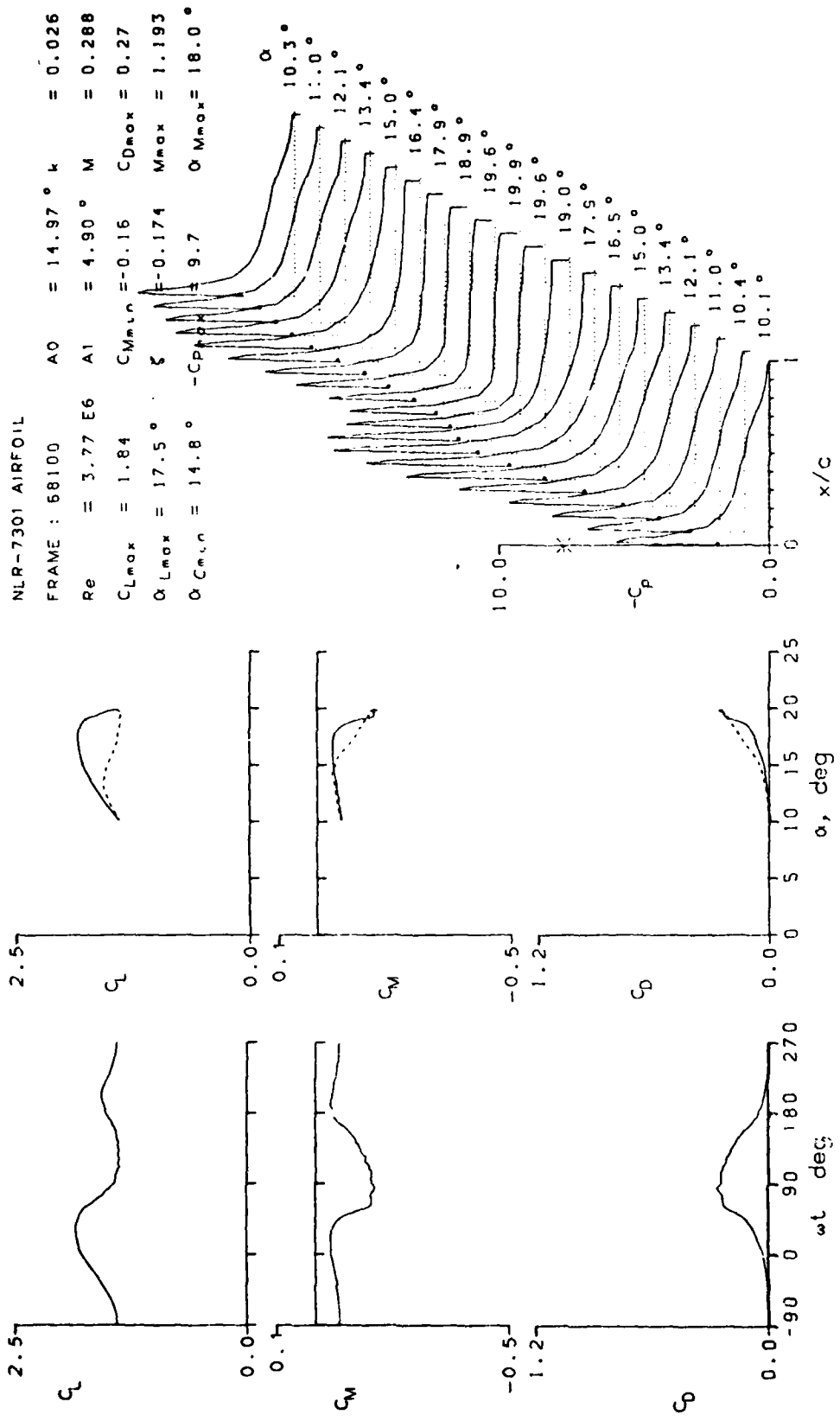


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 68102	A0 = 14.98°	k = 0.052
Re = 3.73 E6	A1 = 4.90°	M = 0.286
CLmax = 1.91	CMmin = -0.18	CDmax = 0.29
α Lmax = 17.0°	ξ = -0.225	Mmax = 1.212
α CMmin = 14.8°	-CDmax = 10.0	α Mmax = 18.3°

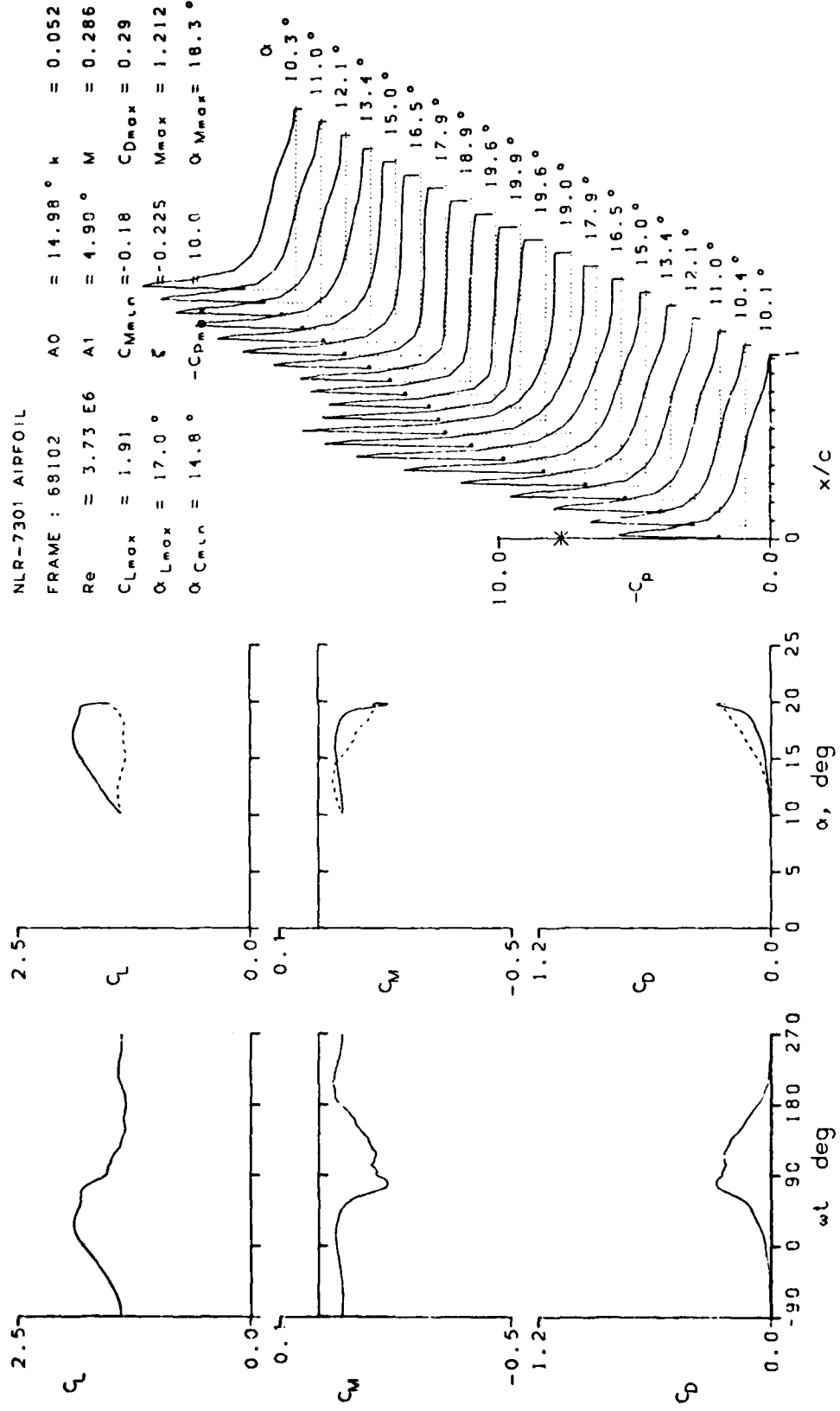


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 68104 $A_0 = 14.97^\circ$ $k = 0.104$
 $R_0 = 3.73 \text{ E6}$ $A_1 = 4.90^\circ$ $M = 0.287$
 $C_{L_{max}} = 2.02$ $C_{M_{min}} = -0.19$ $C_{D_{max}} = 0.29$
 $\alpha_{L_{max}} = 18.2^\circ$ $\zeta = -0.578$ $M_{max} = 1.256$
 $\alpha_{C_{min}} = 14.8^\circ$ $-C_{D_{max}} = 10.3$ $\alpha_{M_{max}} = 18.0^\circ$

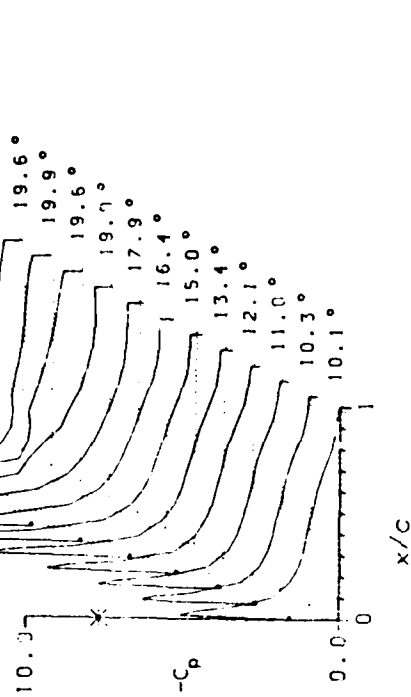
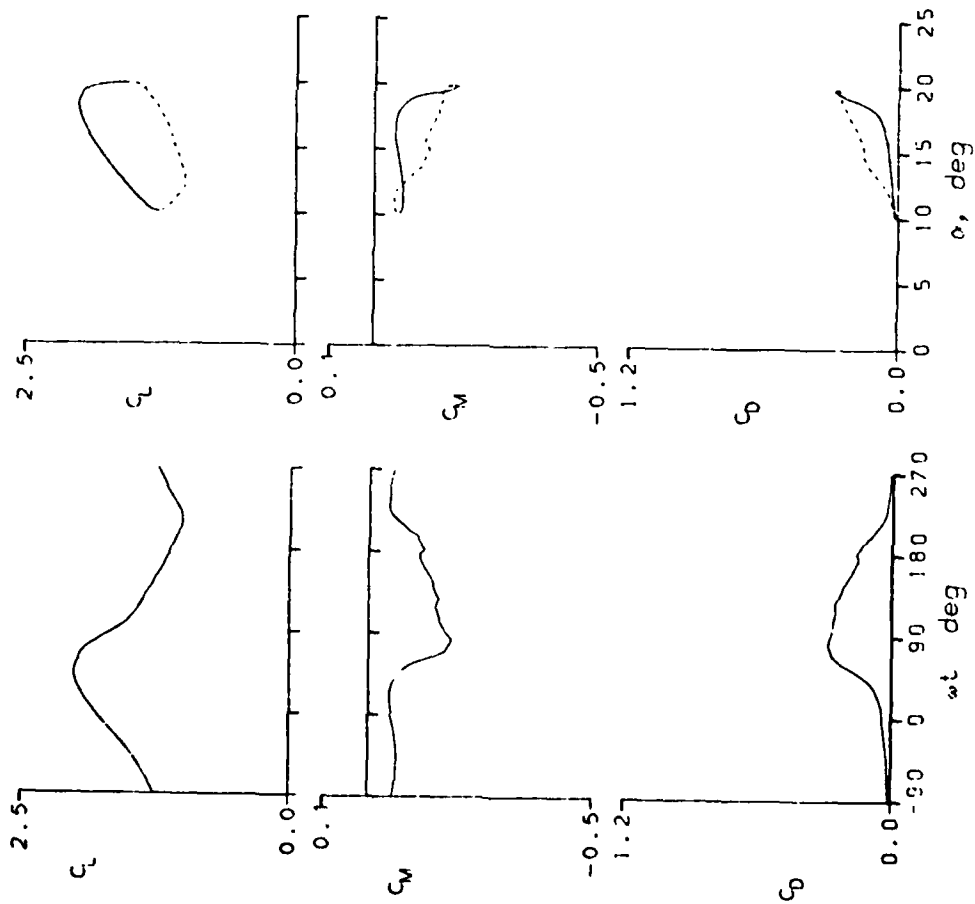


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 68109	A0 = 14.99°	h = 0.154
Re = 3.79 E6	A1 = 4.89°	M = 0.291
CLmax = 2.13	CMmin = -0.21	CDmax = 0.37
αLmax = 19.3°	ξ = -0.687	Mmax = 1.263
αCmin = 14.8°	-CDmax = 10.1	αMmax = 17.9°

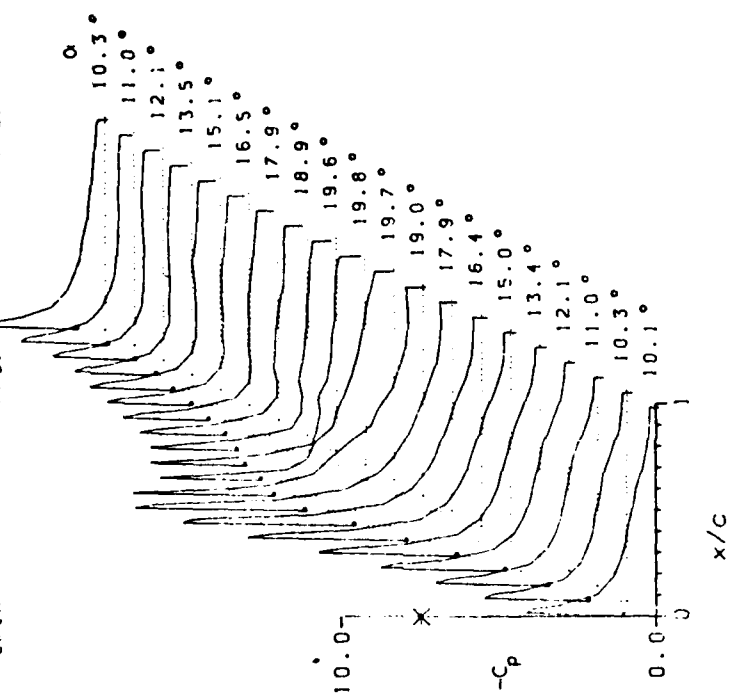
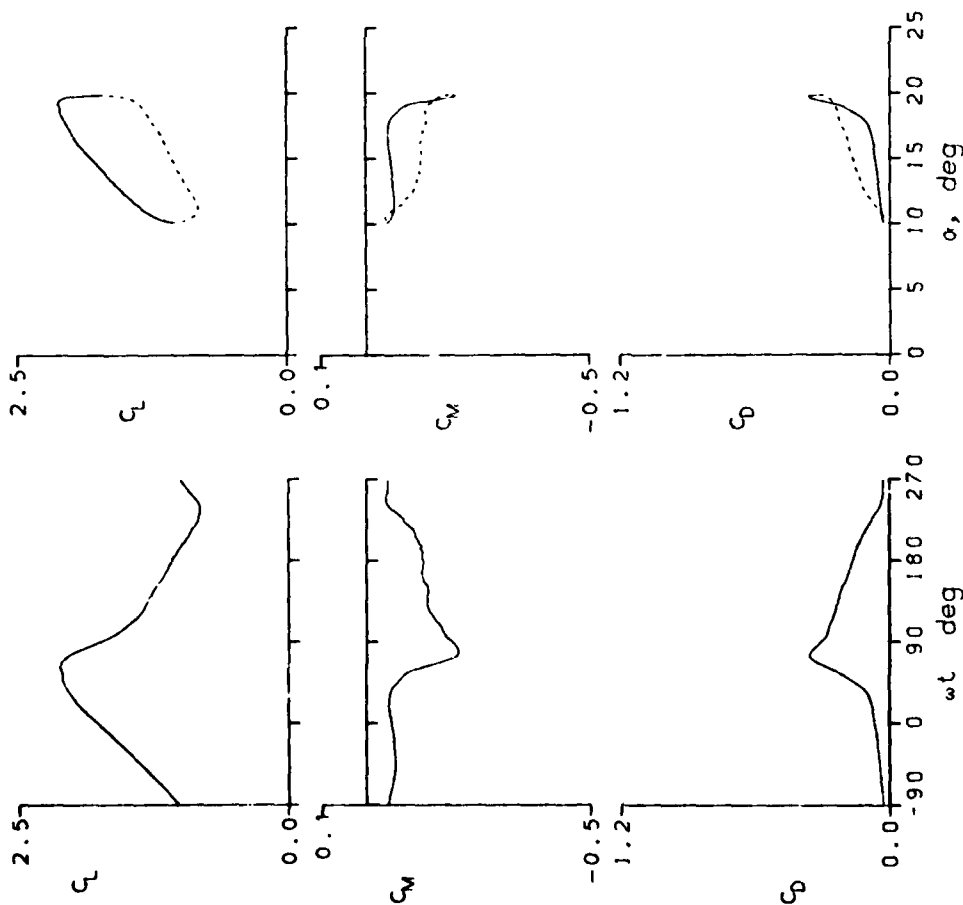


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 68111 A0 = 14.97° k = 0.203

Re = 3.79 E6 A1 = 4.90° M = 0.293

C_{Lmax} = 2.21 C_{Mmin} = -0.25 C_{Dmax} = 0.46

α_{Lmax} = 19.7° ξ = -0.404 M_{max} = 1.268

α_{Cmin} = 14.8° $-C_{Dmax}$ = 10.0 α_{Mmax} = 17.8°

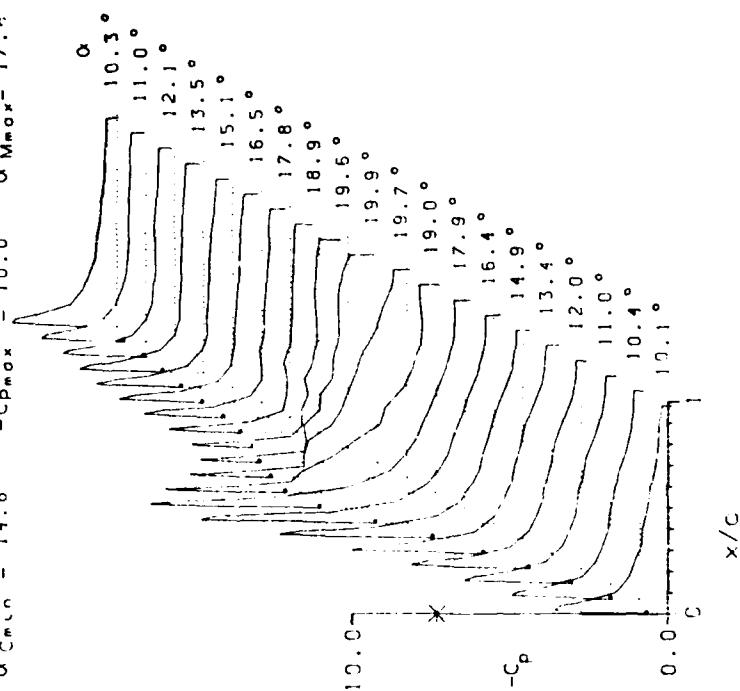
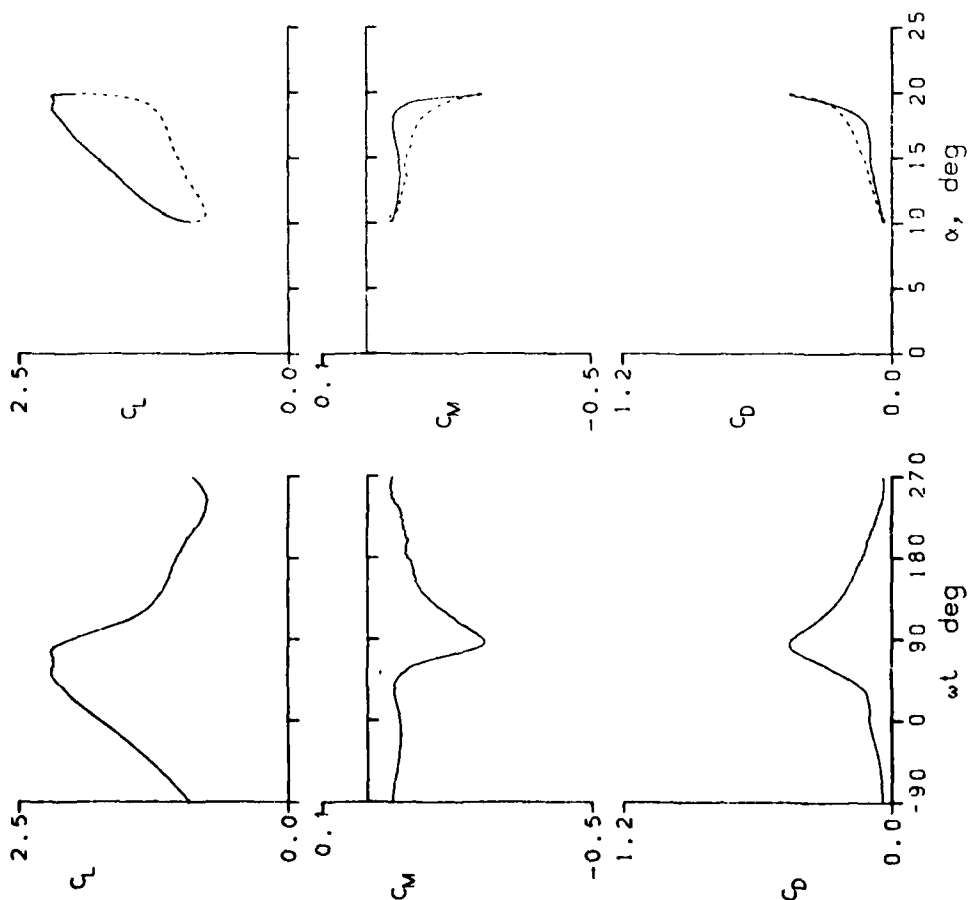


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 60113	A0 = 9.96°	μ = 0.010
Re = 3.81 E6	A1 = 4.90°	M = 0.297
CLmax = 1.71	CMmin = -0.08	CDmax = 0.04
αLmax = 14.9°	ξ = 0.013	Mmax = 1.117
αCmin = 9.8°	-CDmax = 8.3	αMmax = 14.9°

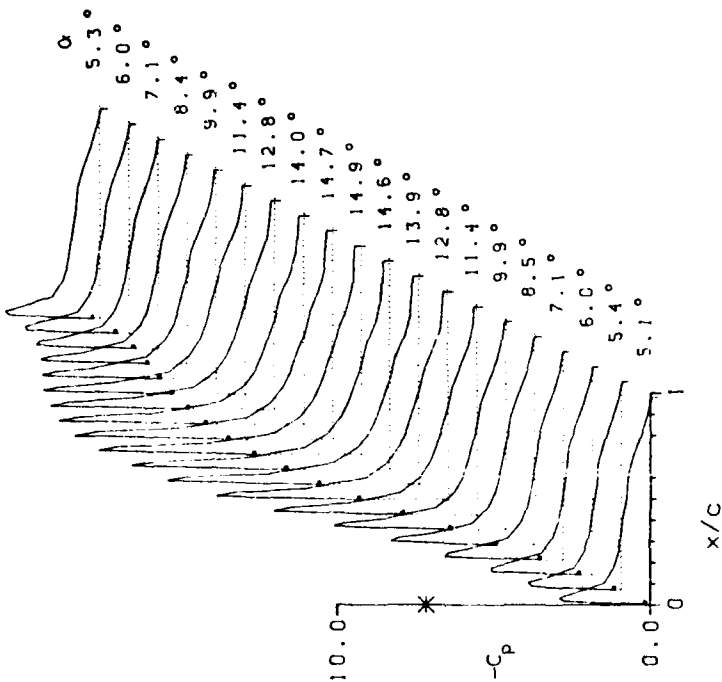
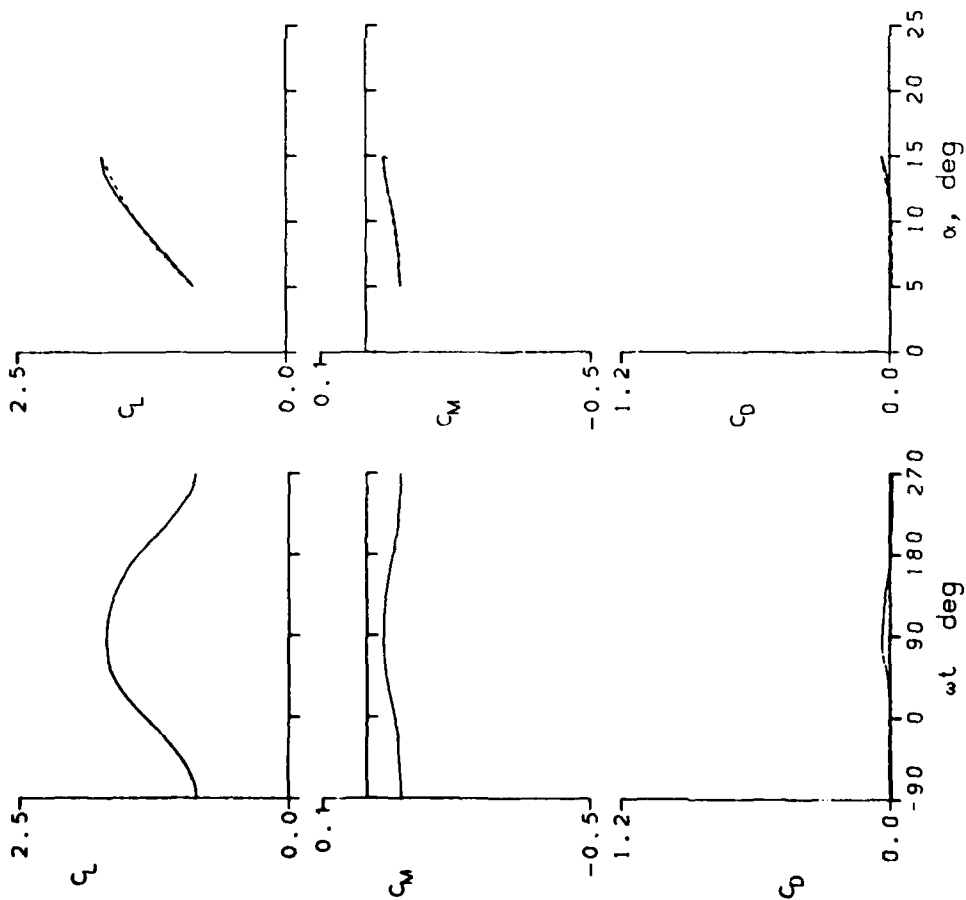


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 58121	A0 = 9.97 °	k = 0.025
Re = 3.79 E6	A1 = 4.90 °	M = 0.298
C _{Lmax} = 1.72	C _{Mmin} = -0.08	C _{Dmax} = 0.04
α _{Lmax} = 14.7 °	ξ = 0.044	M _{max} = 1.129
α _{Cmin} = 9.8 °	-C _{Dmax} = 8.4	α _{Mmax} = 14.6 °

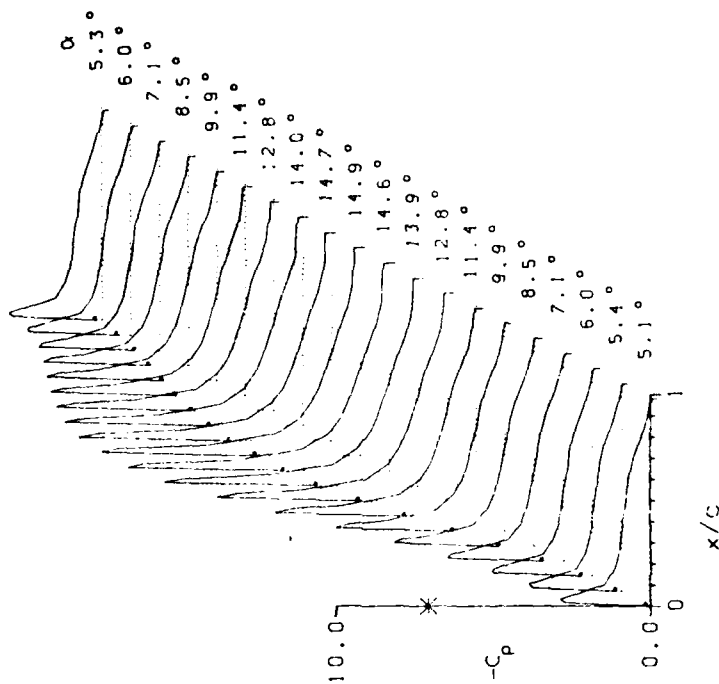
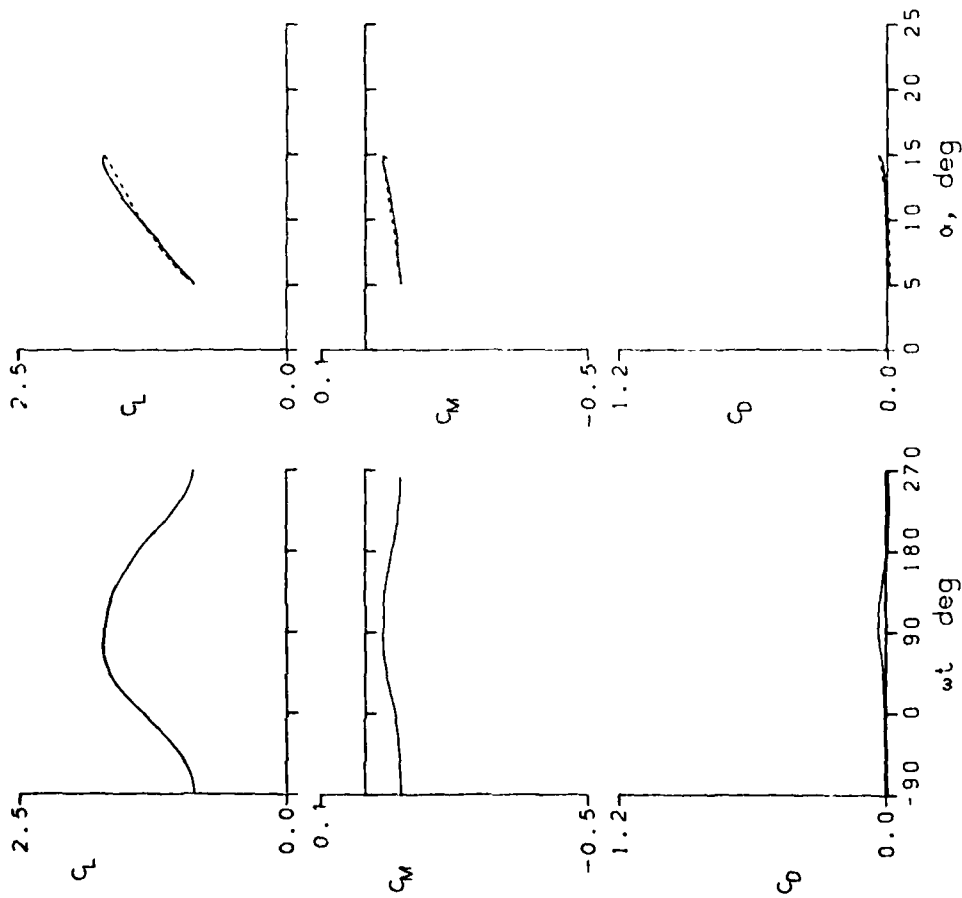


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 58123	A0 = 9.97°	k = 0.049
Re = 3.79 E6	A1 = 4.90°	M = 0.299
C _{Lmax} = 1.76	C _{Mmin} = -0.09	C _{Dmax} = 0.04
α _{Lmax} = 14.6°	ξ = 0.112	M _{max} = 1.152
α _{Cmin} = 9.8°	-C _{Dmax} = 8.6	α _{Mmax} = 14.8°

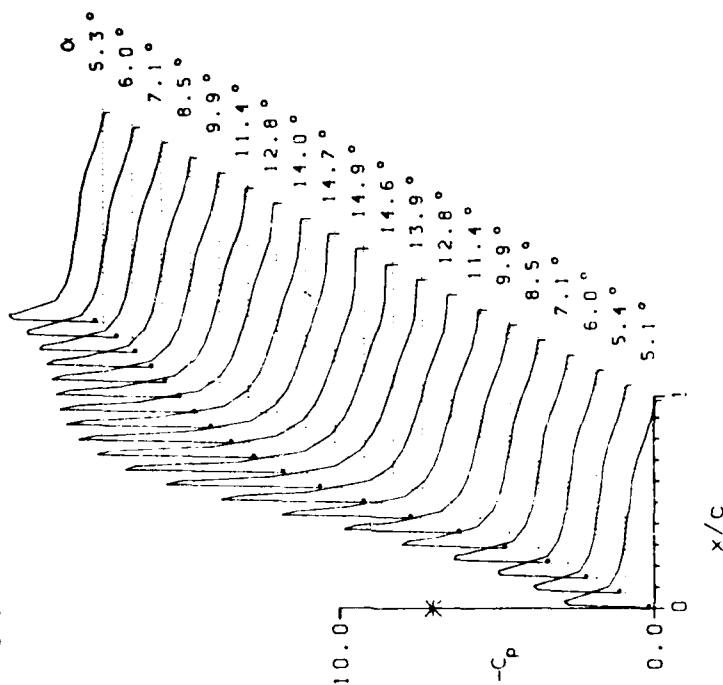
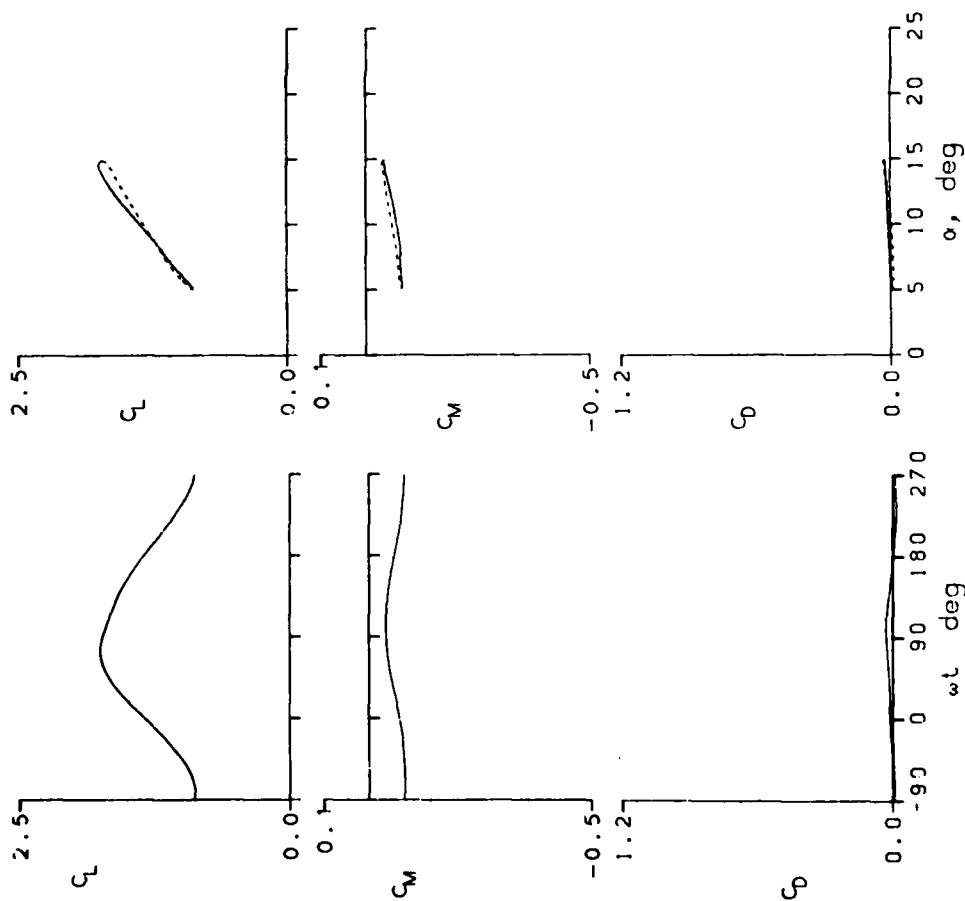


Figure 19.- Continued.

NLR-7301 A:REQ'L

FRAME : 68201 $\alpha_0 = 9.96^\circ$ $k = 0.098$

$Re = 3.81 \text{ E}6$ $A1 = 4.90^\circ$ $M = 0.300$

$C_{Lmax} = 1.72$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.03$

$\alpha_{Lmax} = 14.7^\circ$ $\alpha' = 0.279$ $M_{max} = 1.177$

$\alpha_{Cmin} = 9.8^\circ$ $-C_{Dmax} = 8.7$ $\alpha_{Mmax} = 14.9^\circ$

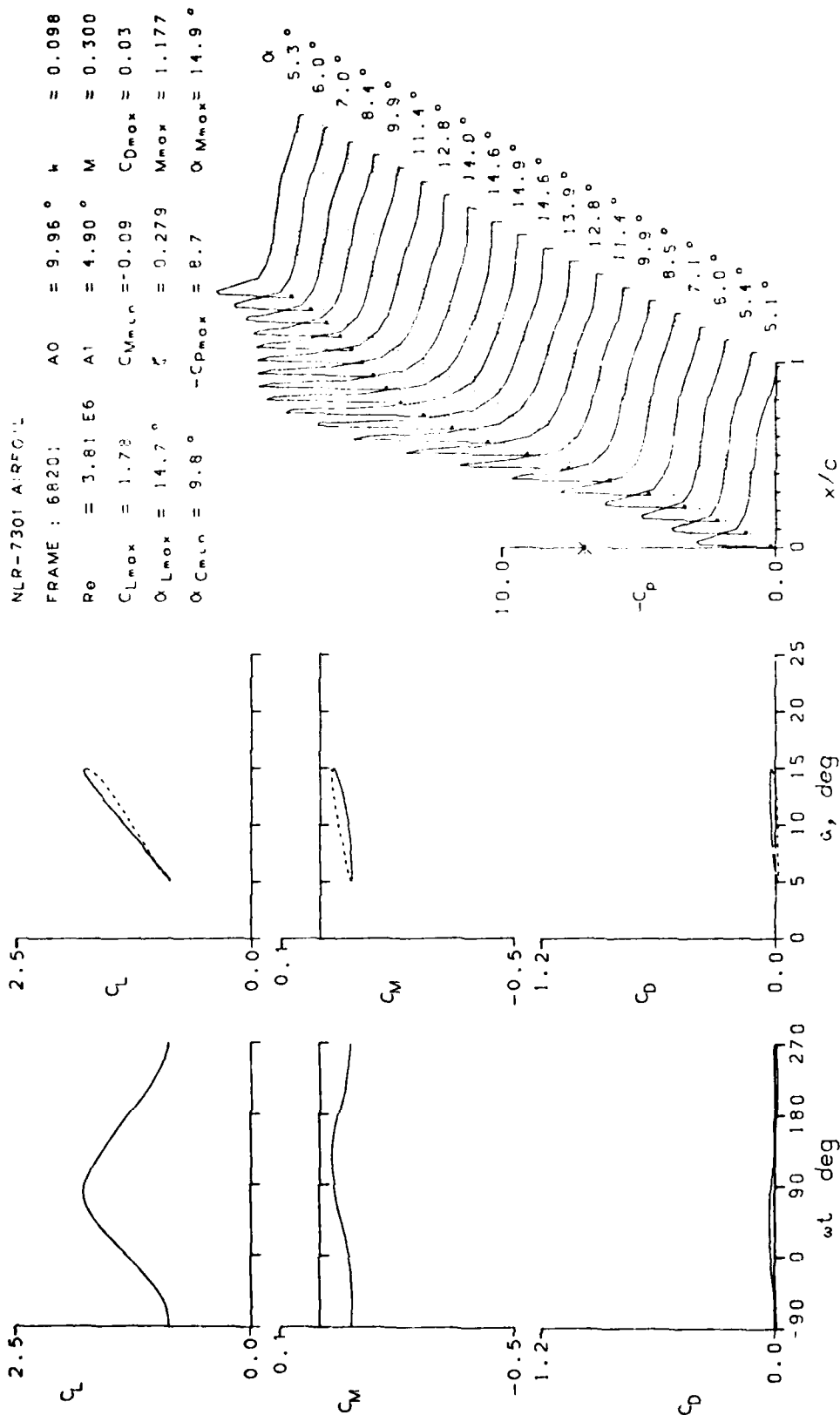


Figure 19.- Continued.

NLR-7301 AIRFOIL
 FRAME : 68203 $A_0 = 9.98^\circ$ $k = 0.196$
 $Re = 3.82 \text{ E}6$ $A_1 = 4.90^\circ$ $M = 0.302$
 $C_{Lmax} = 1.87$ $C_{Mmin} = -0.10$ $C_{Dmax} = 0.05$
 $\alpha_{Lmax} = 14.8^\circ$ $\xi = 0.674$ $M_{max} = 1.228$
 $\alpha_{Cmin} = 9.8^\circ$ $-C_{Dmax} = 9.1$ $\alpha_{Mmax} = 14.9^\circ$

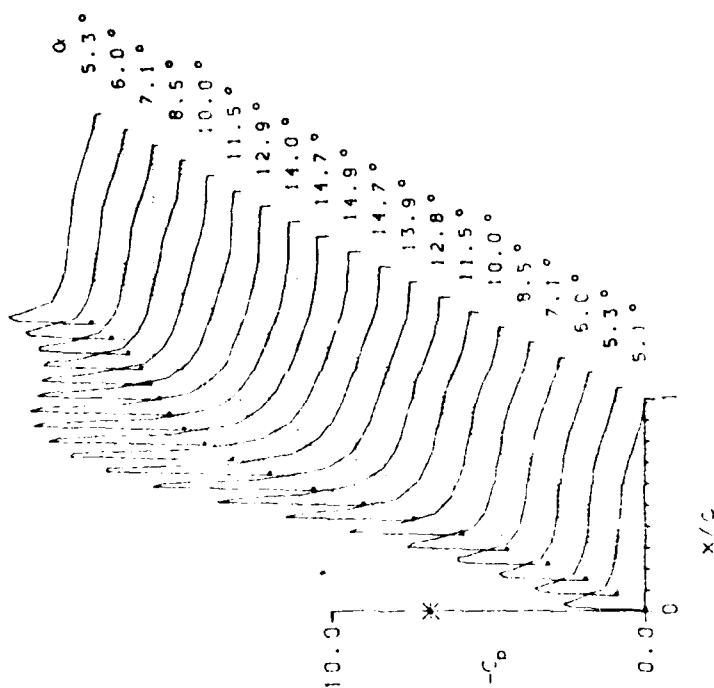
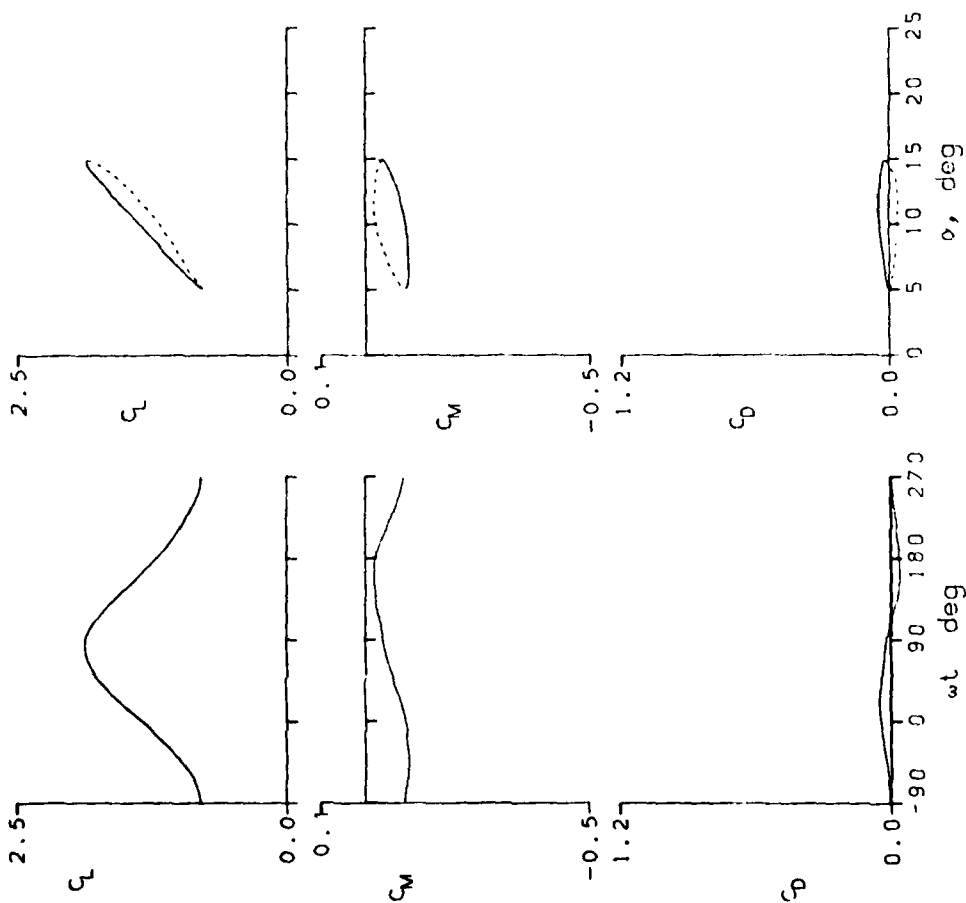


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 68211	A0 = 4.96 °	k = 0.198
Re = 7.84 E6	A1 = 5.00 °	M = 0.299
CLmax = 1.36	CMmin = -0.10	CDmax = 0.03
αLmax = 10.0 °	ξ = 0.495	Mmax = 0.868
αCMmin = 4.8 °	-CPmax = 5.6	αMmax = 9.9 °

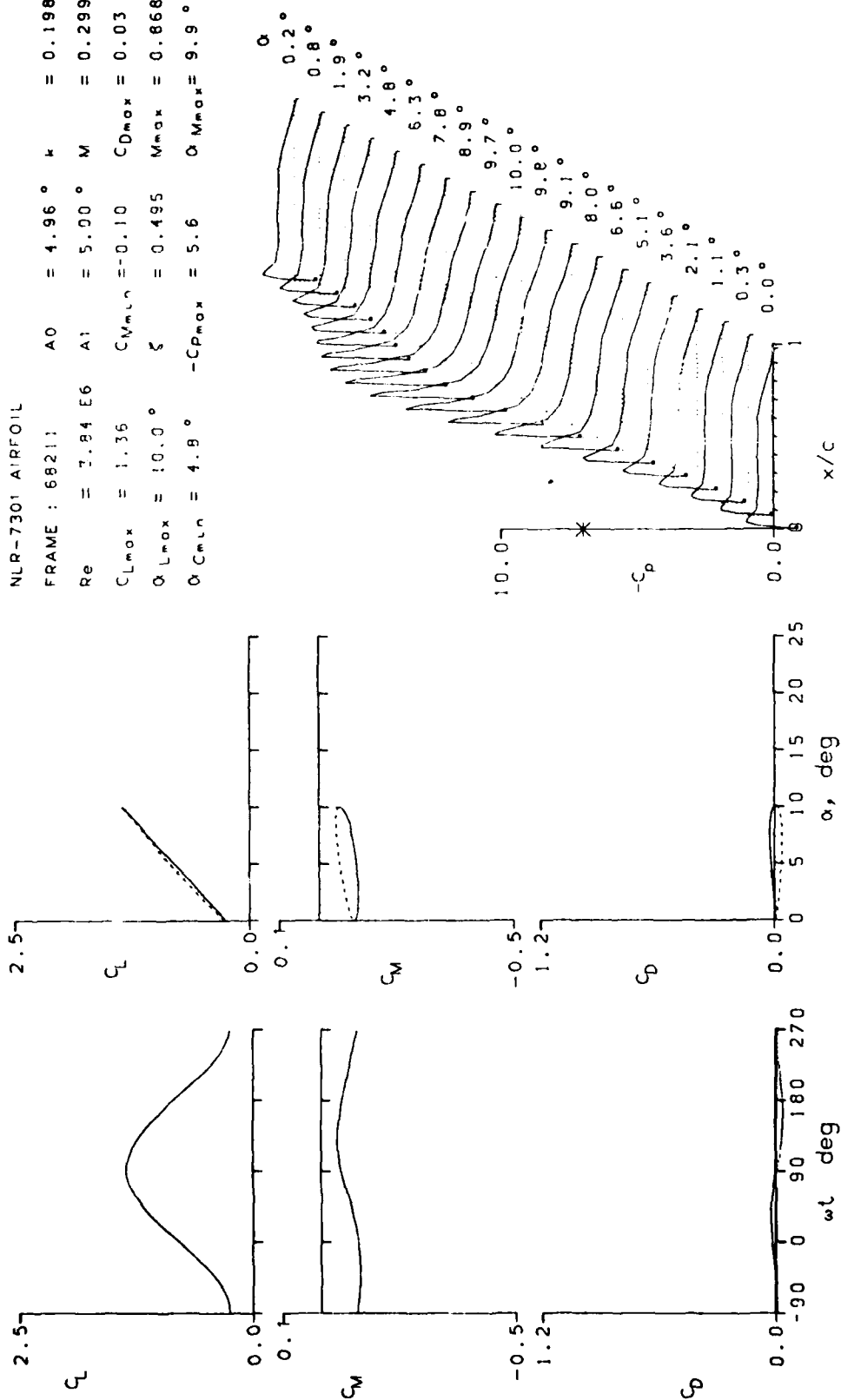


Figure 19.- Continued.

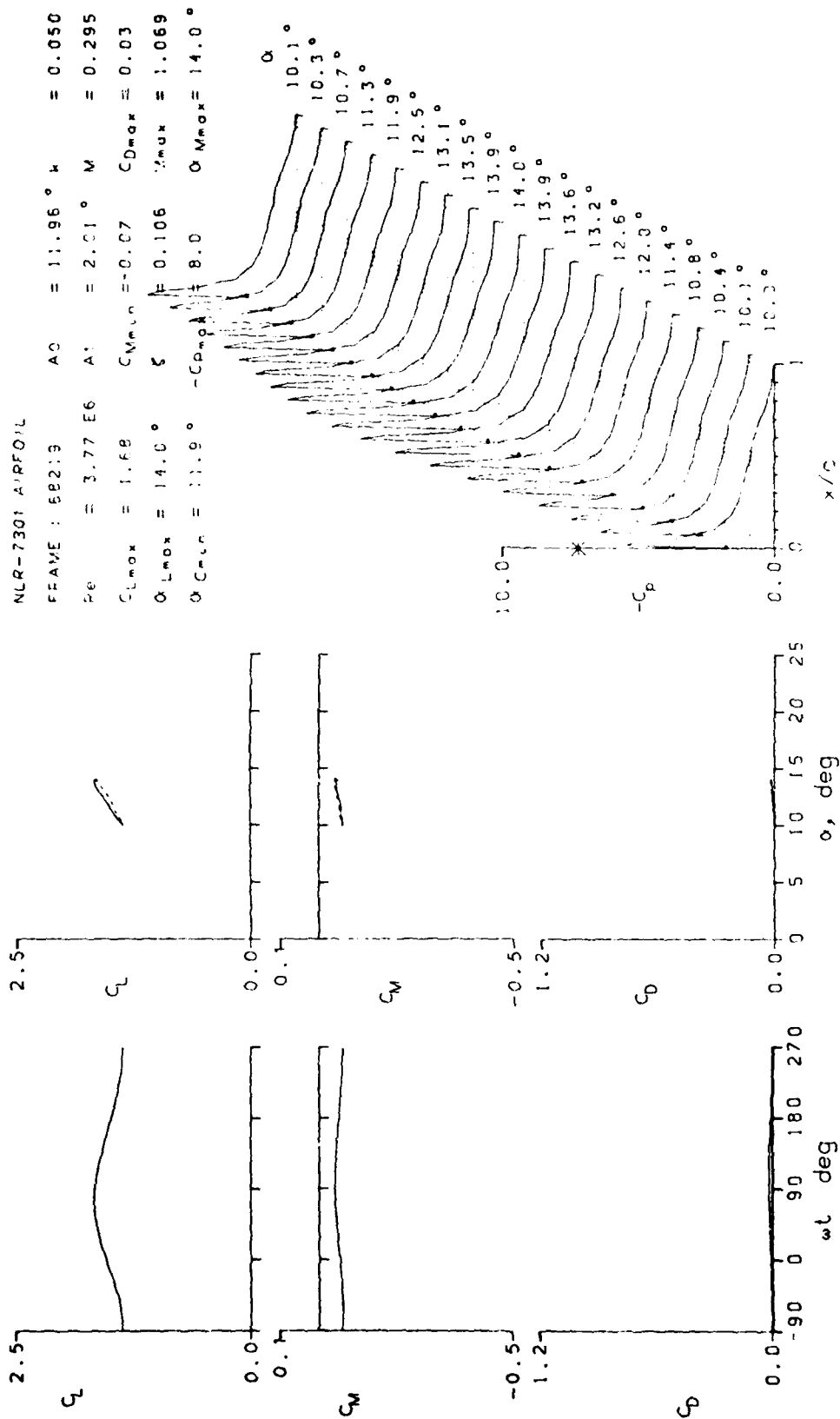


Figure 19.- Continued.

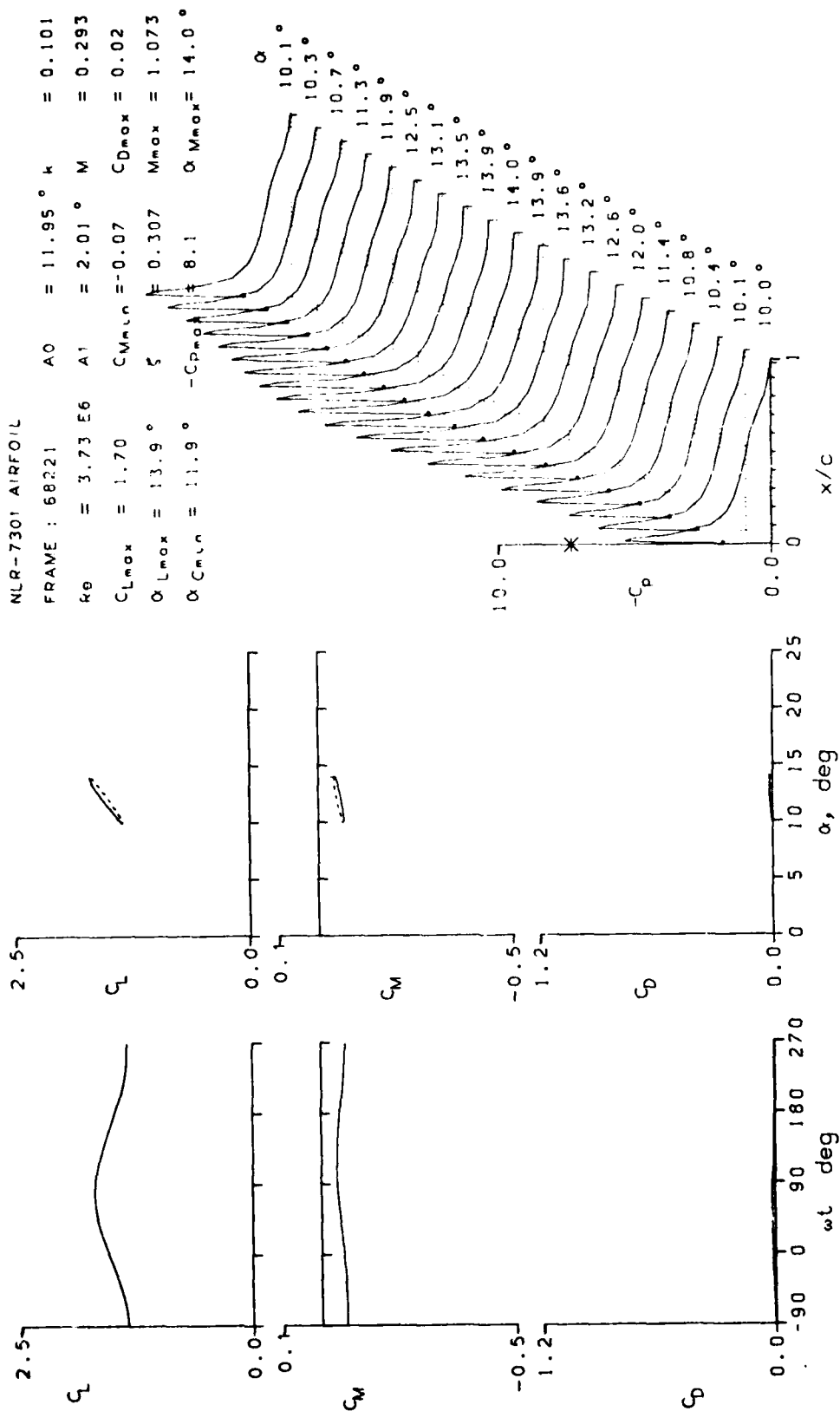


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 58304	A0 = 11.96°	k = 0.201
Re = 3.72 E6	A1 = 2.01°	M = 0.293
CLmax = 1.75	CMmin = -0.08	CDmax = 0.03
αLmax = 13.9°	ξ = 0.773	Mmax = 1.112
αCmin = 11.9°	-CPmax = 8.5	αMmax = 14.0°

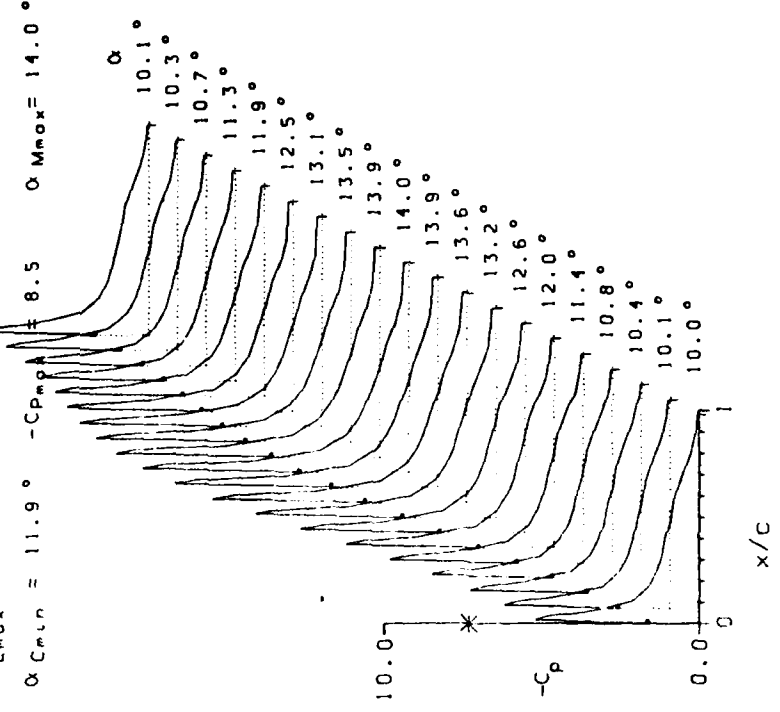
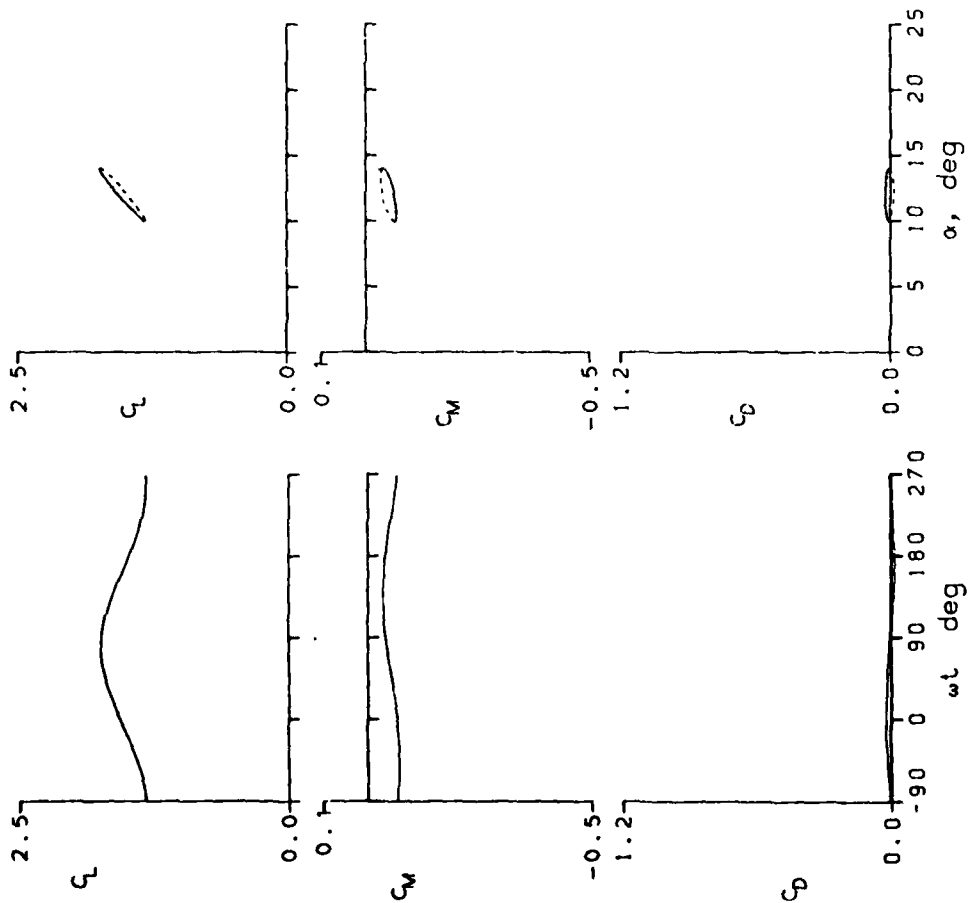


Figure 19.- Continued.

NLR-7301 AIRFOIL
 FRAME : E9019 $A_0 = 9.80^\circ$ $k = 0.010$
 $Re = 3.95 \text{ E}6$ $A_1 = 9.90^\circ$ $M = 0.299$
 $C_{Lmax} = 1.74$ $C_{Mmin} = -0.15$ $C_{Dmax} = 0.25$
 $\alpha_{Lmax} = 14.7^\circ$ $\xi = 0.003$ $M_{max} = 1.182$
 $\alpha_{Cmin} = 9.3^\circ$ $-C_{Dmax} = 8.8$ $\alpha_{Mmax} = 16.7^\circ$

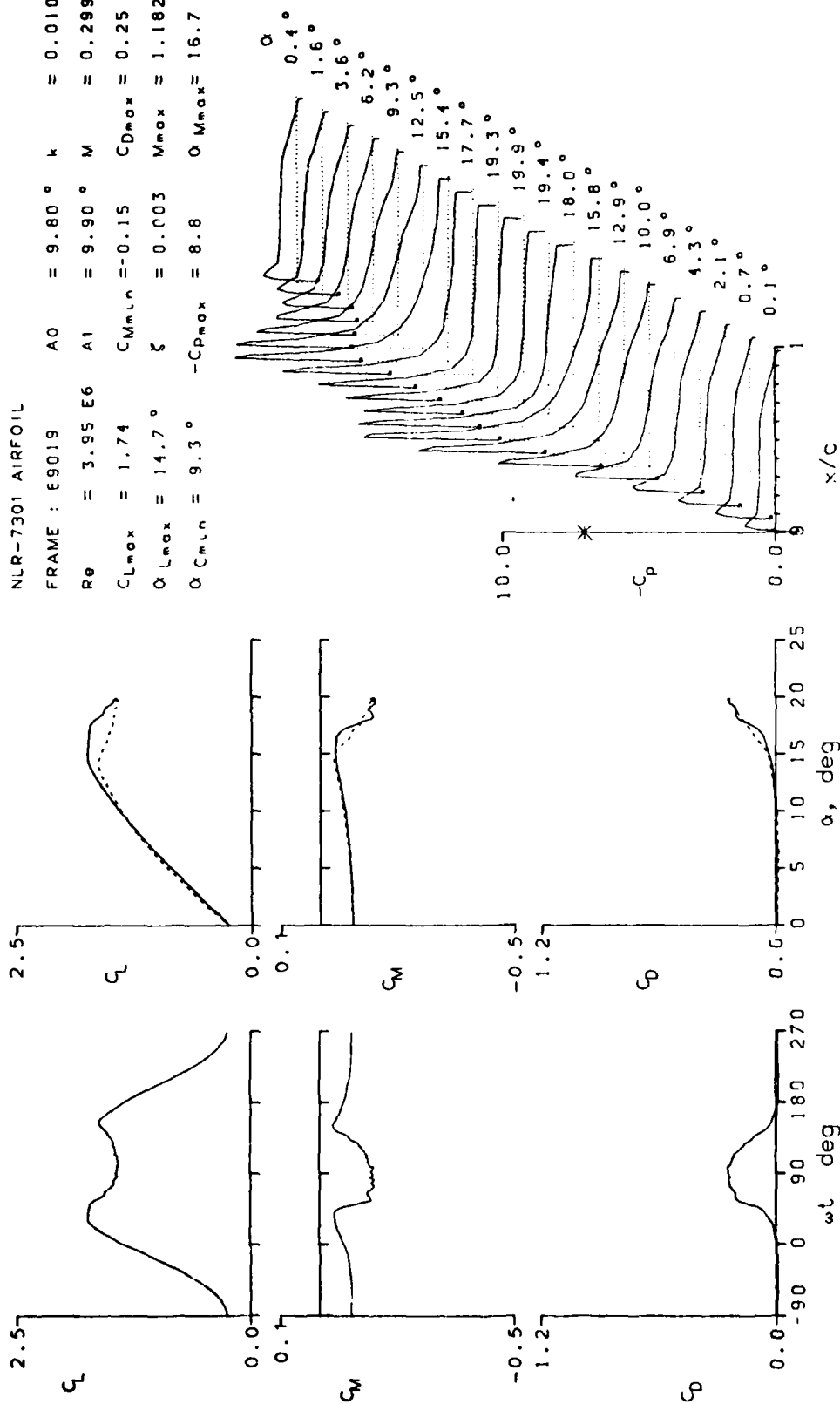


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69100	A0 = 9.81°	k = 0.025
Re = 3.92 E6	A1 = 9.89°	M = 0.300
C _{Lmax} = 1.81	C _{Mmin} = -0.16	C _{Dmax} = 0.25
α _{Lmax} = 15.8°	ξ = 0.016	M _{max} = 1.210
α _{Cmin} = 9.3°	-C _{Pmax} = 9.0	α _{Mmax} = 16.8°

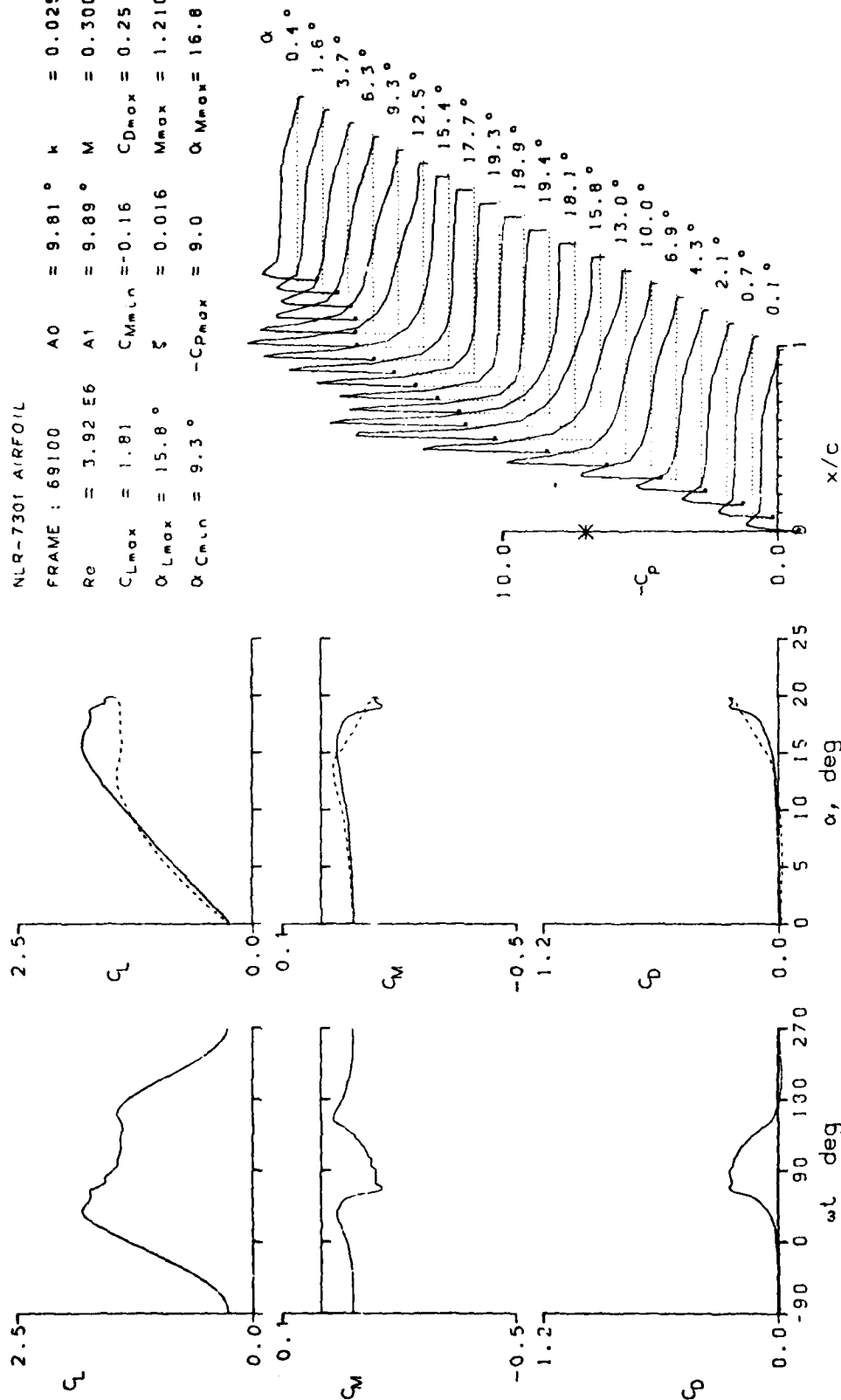


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69102	A0 = 9.82°	k = 0.050
Re = 3.90 E6	A1 = 9.89°	M = 0.300
C _{Lmax} = 1.92	C _{Mmin} = -0.17	C _{Dmax} = 0.28
α _{Lmax} = 16.5°	ξ = 0.002	M _{max} = 1.238
α _{Cmin} = 9.3°	-C _{Dmax} = 9.2	α _{Mmax} = 16.5°

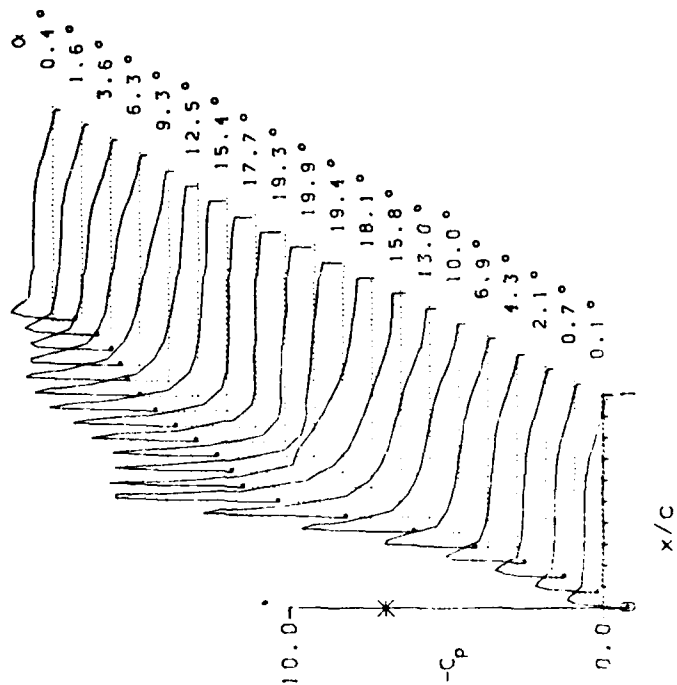
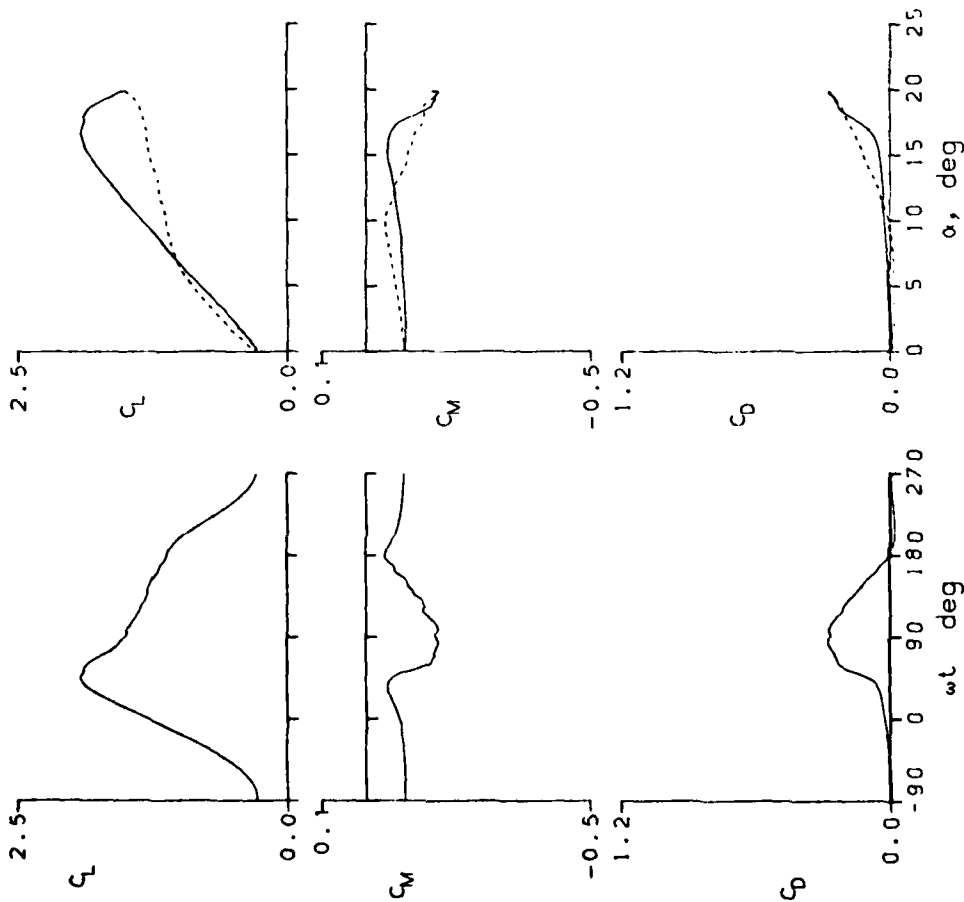


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69105	A0 = 9.80 °	k = 0.099
Re = 3.90 E6	A1 = 9.90 °	M = 0.301
C _{Lmax} = 2.07	C _{Mmin} = -0.20	C _{Dmax} = 0.32
α _{Lmax} = 18.7 °	ξ = 0.061	M _{max} = 1.262
α _{Cmin} = 9.3 °	-C _{pmax} = 9.4	α _{Mmax} = 17.3 °

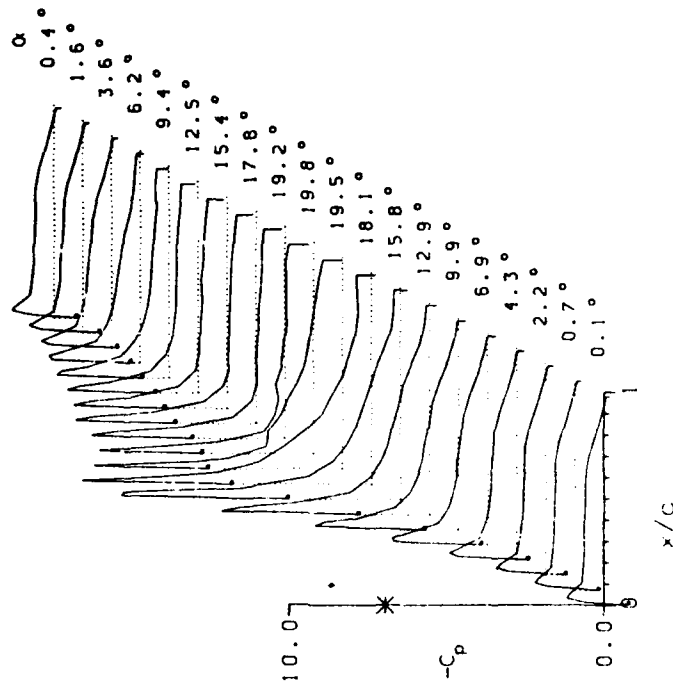
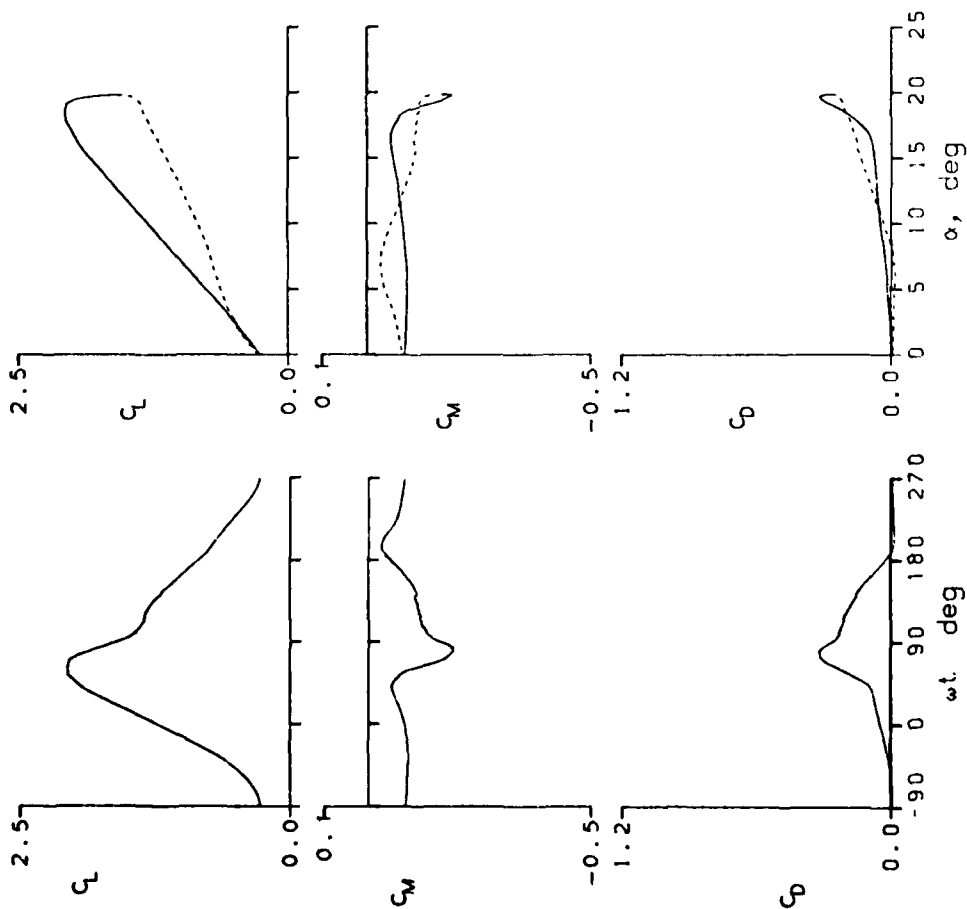


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69107	A0 = 9.91°	ν = 0.148
Re = 3.88 E6	A1 = 9.90°	M = 0.300
$C_{Lmax} = 2.14$	$C_{Mmin} = -0.22$	$C_{Dmax} = 0.35$
$\alpha_{Lmax} = 18.8°$	$\xi = 0.156$	$M_{max} = 1.271$
$\alpha_{Cmin} = 9.5°$	$-C_{pmax} = 9.5$	$\alpha_{Mmax} = 17.8°$

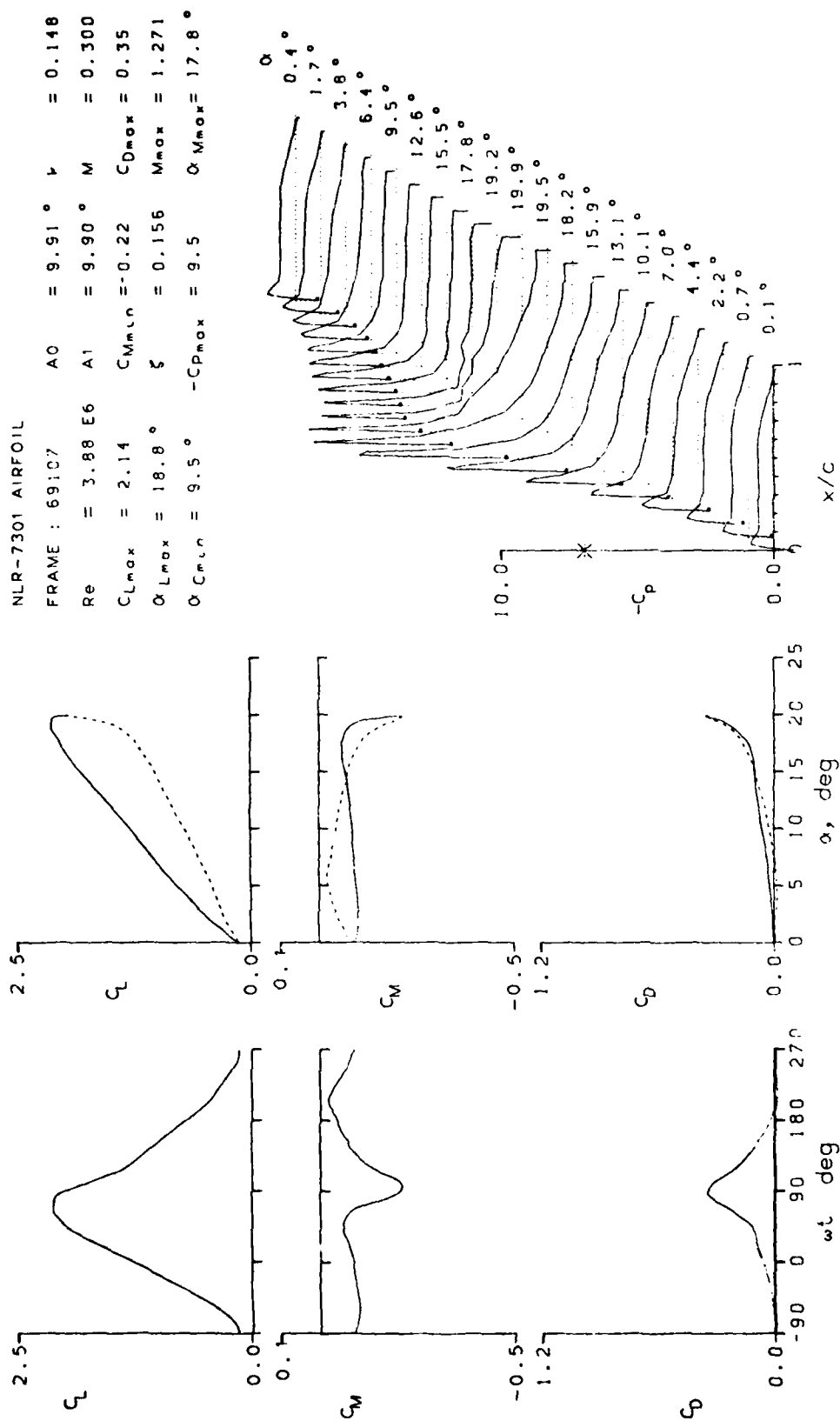


Figure 19.- Continued.

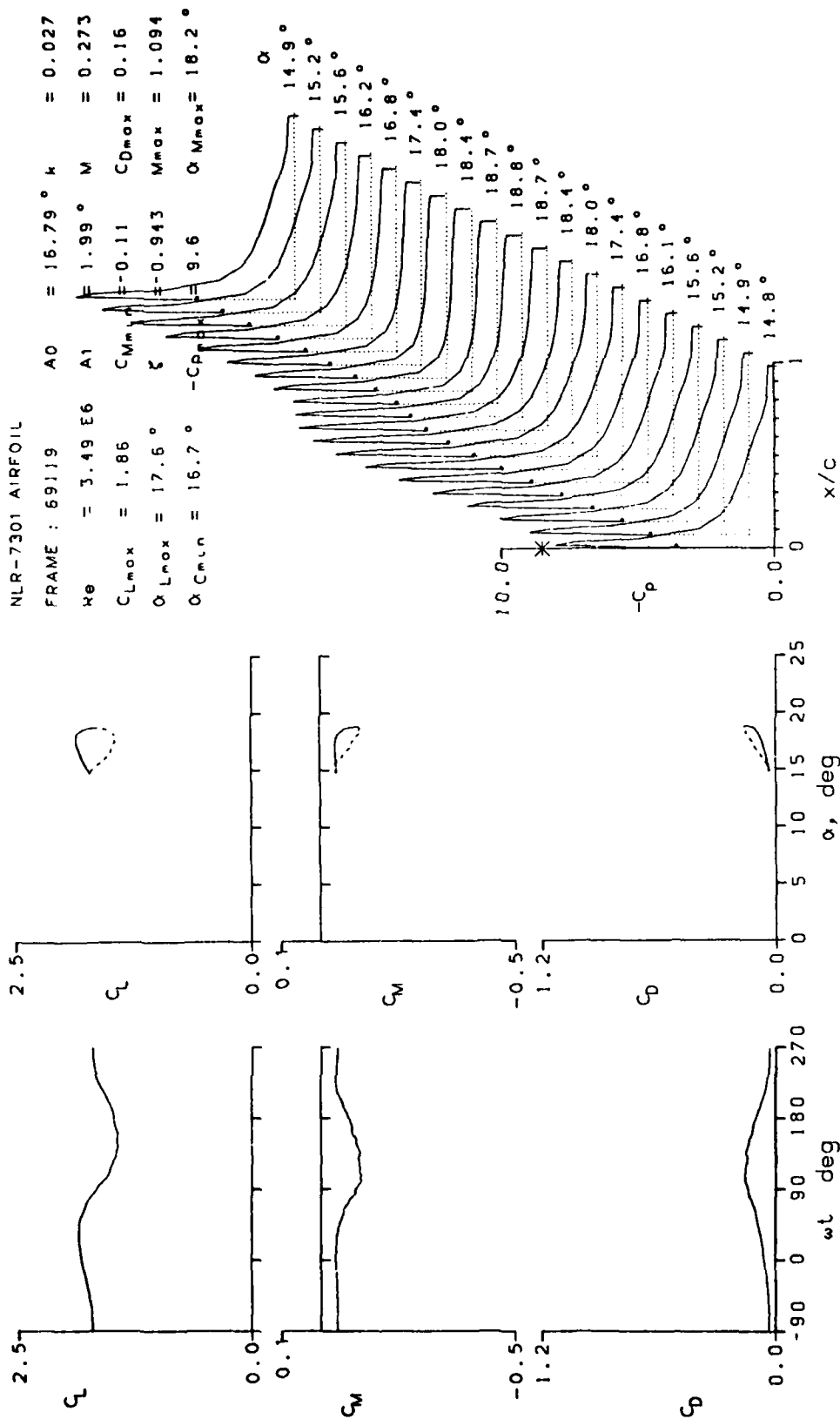


Figure 19.- Continued.

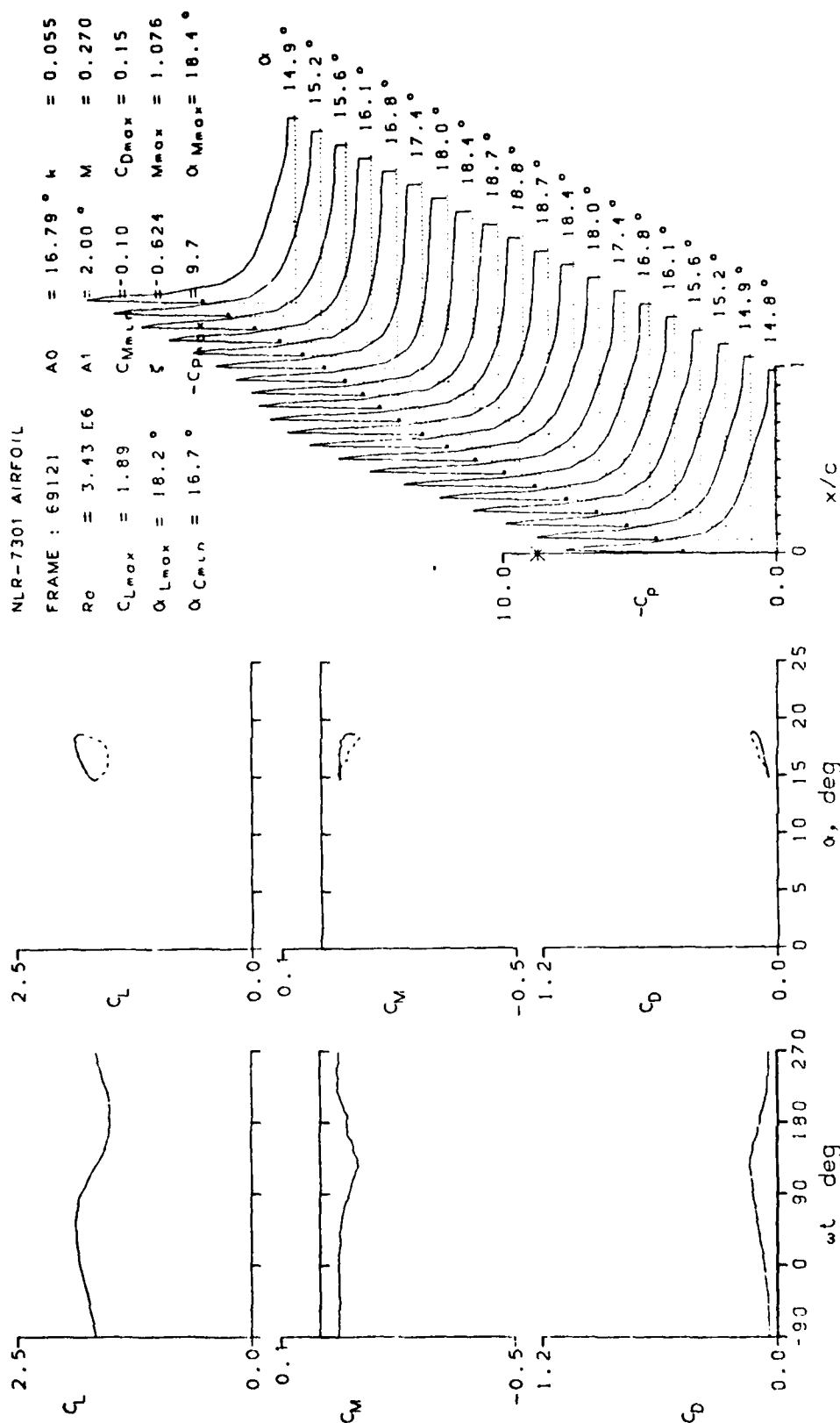


Figure 19.- Continued.

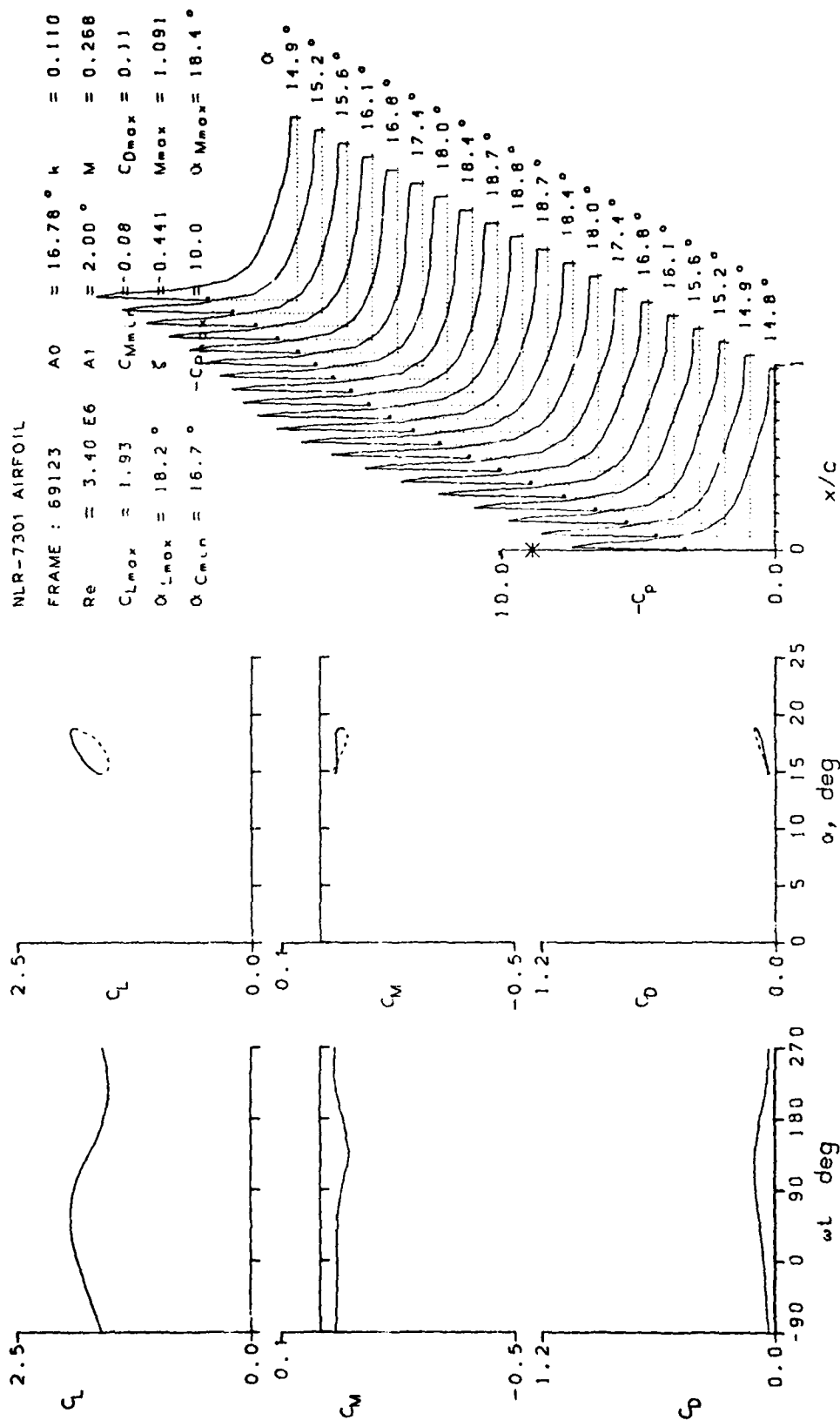


Figure 19.- Continued.

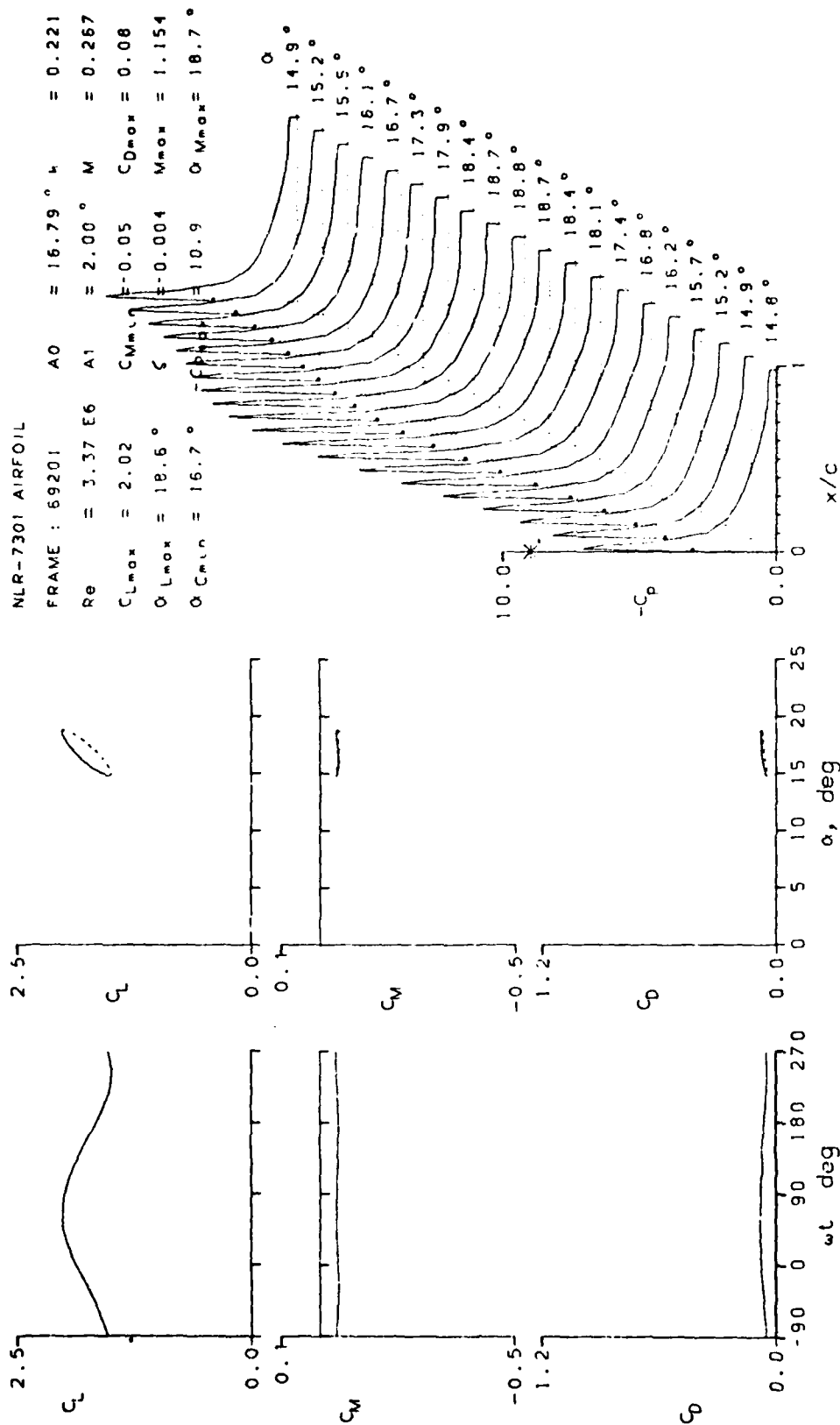


Figure 19.- Continued.

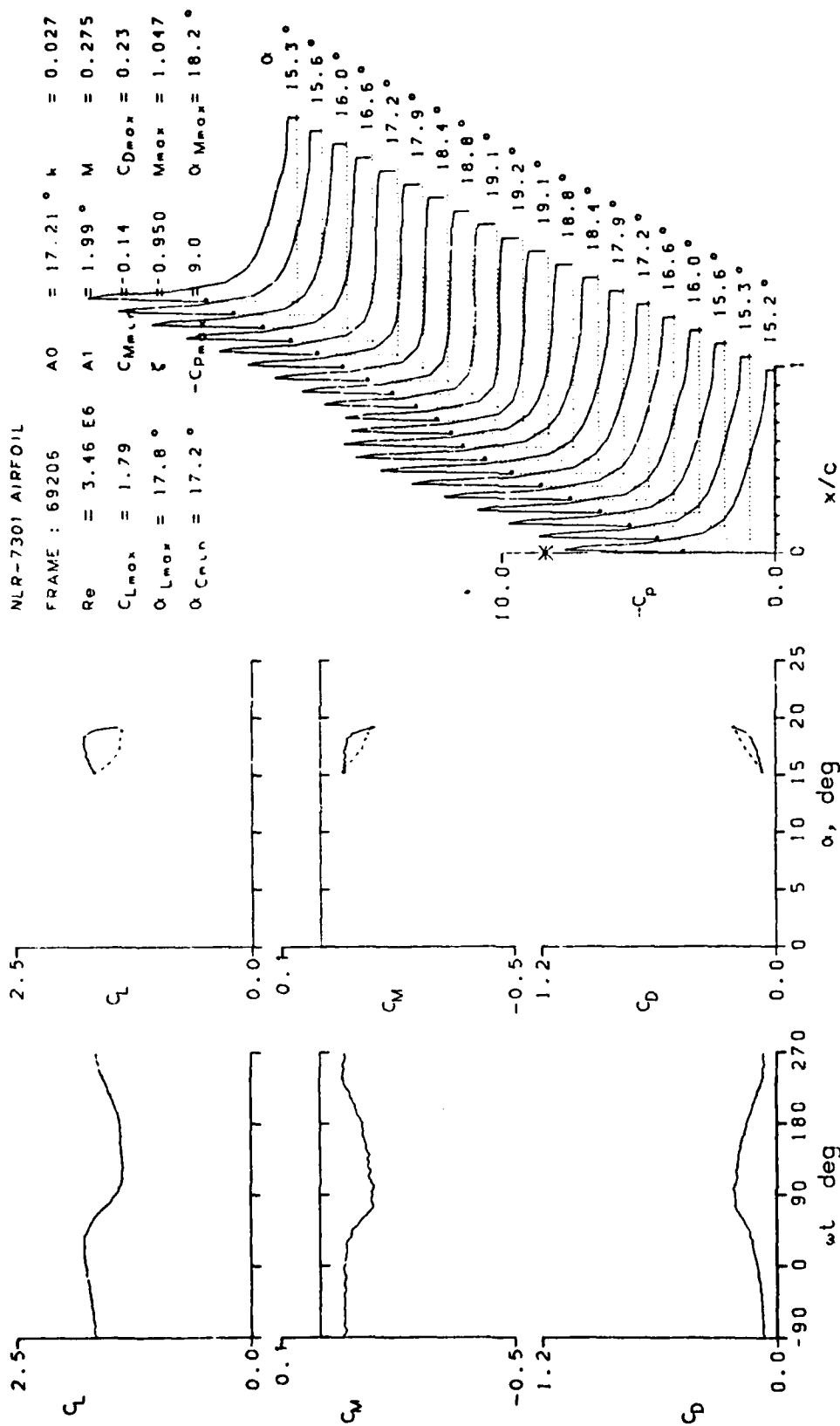


Figure 19.- Continued.

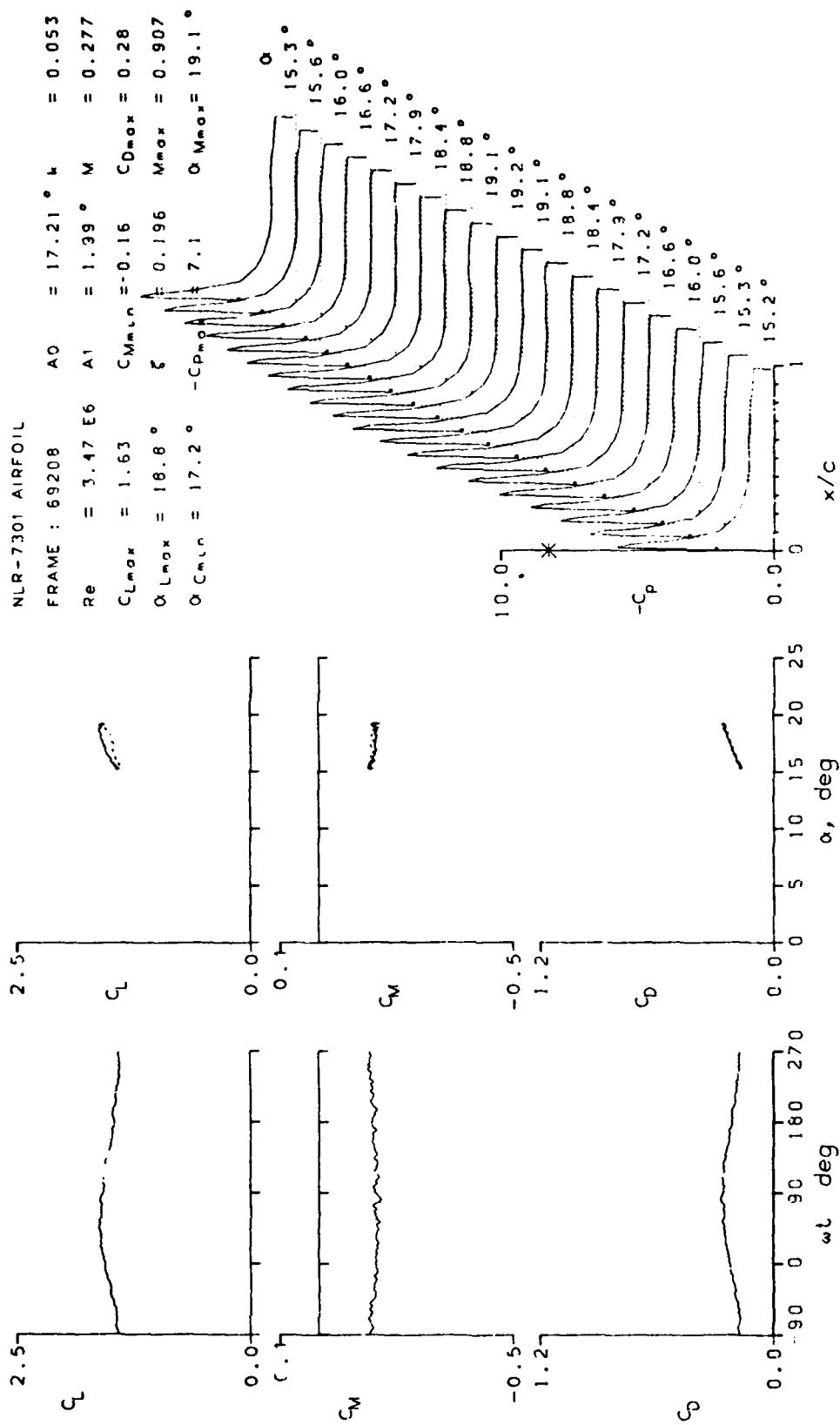


Figure 19.- Continued.

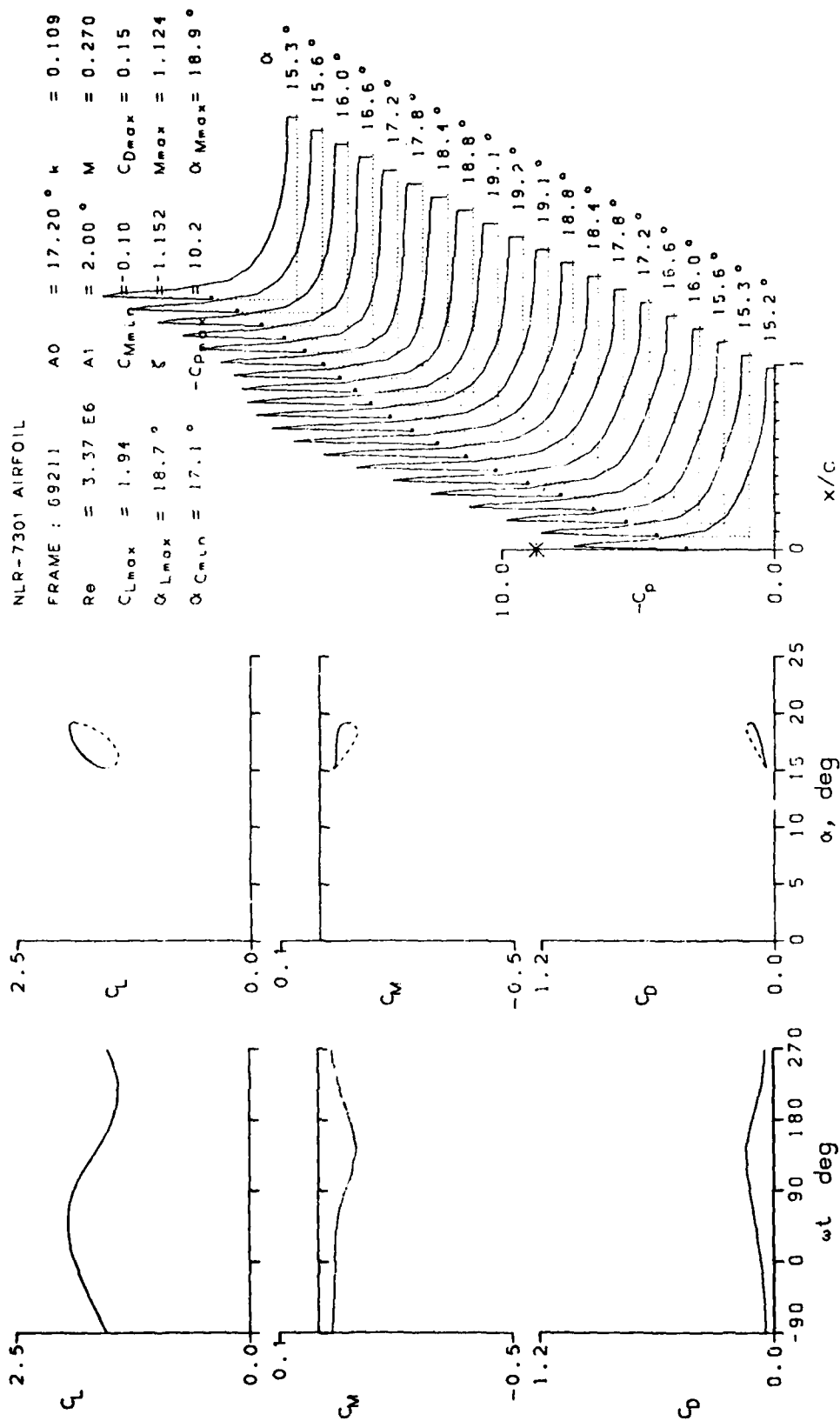


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69213	A0 = 17.19 °	k = 0.162
Re = 3.39 E6	A1 = 2.00 °	M = 0.272
$C_{Lmax} = 0.99$	$C_{Mmin} = -0.21$	$C_{Dmax} = 0.38$
$\alpha_{Lmax} = 18.5 °$	$\xi = 1.062$	$M_{max} = 0.418$
$\alpha_{Cmin} = 17.2 °$	$-C_{Dmax} = 1.3$	$\alpha_{Vmax} = 19.2 °$

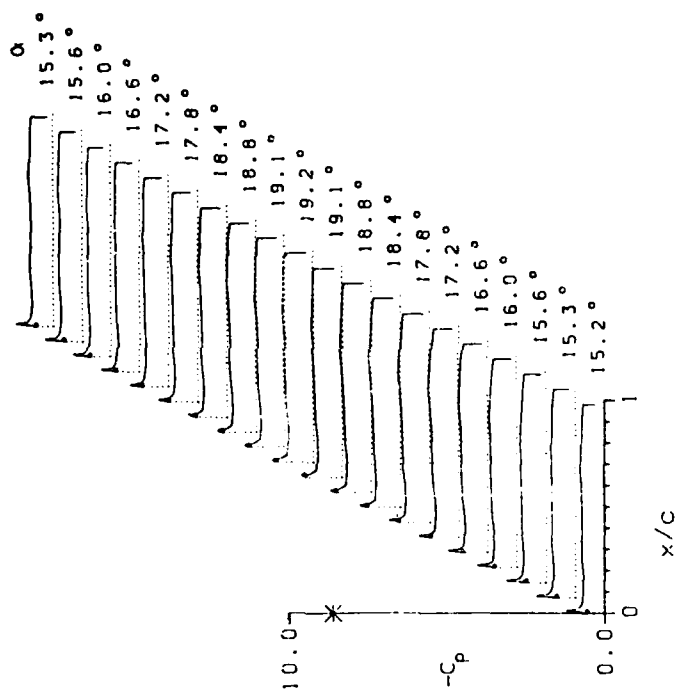
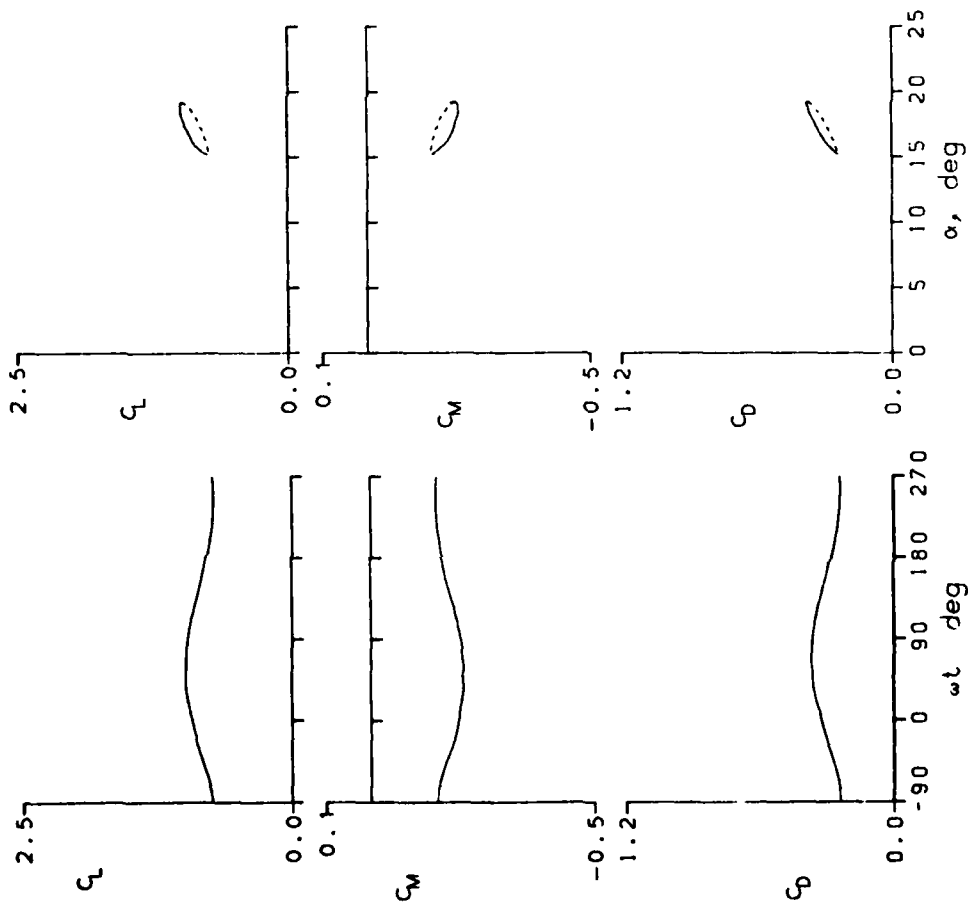


Figure 19.- Continued.

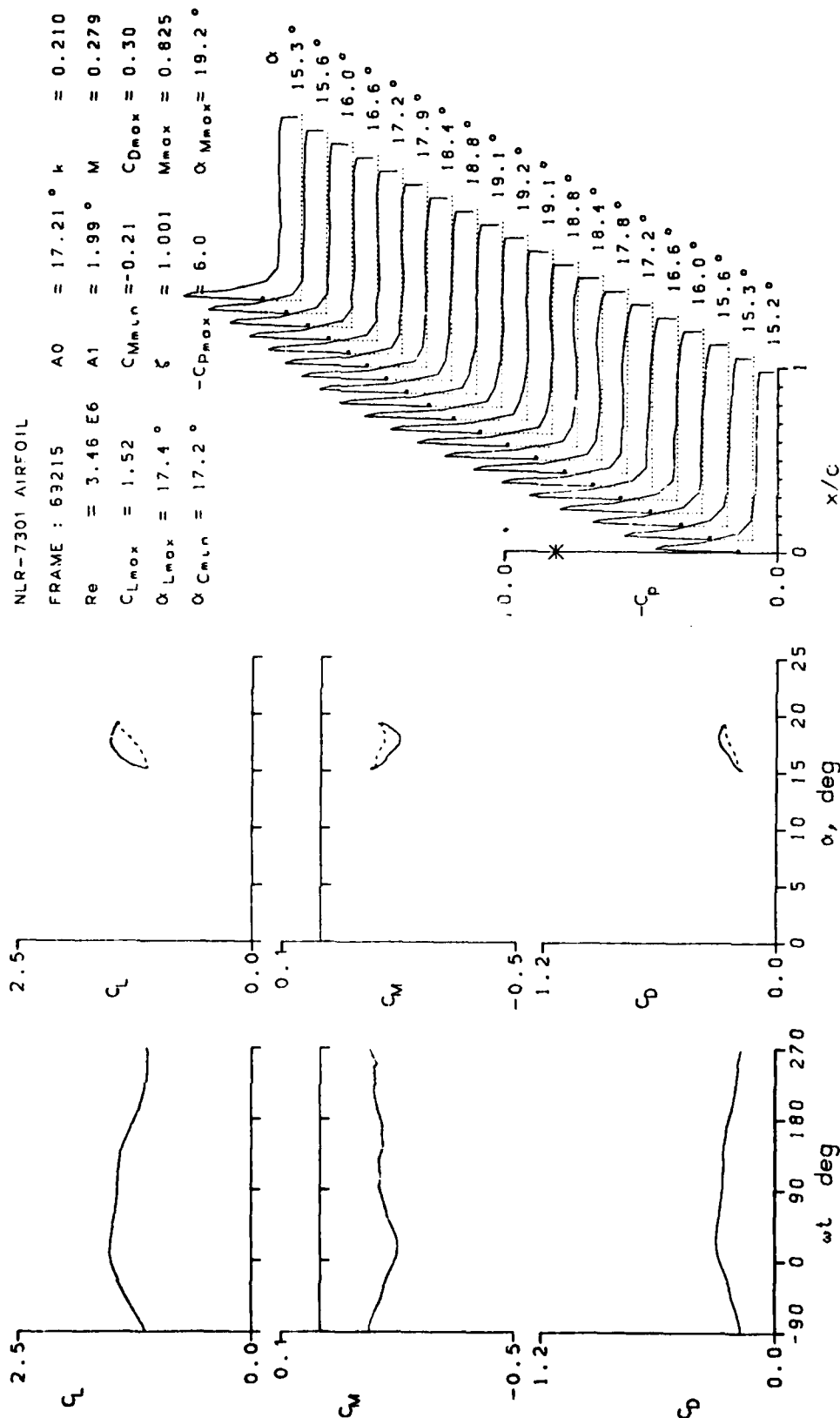


Figure 19.- Continued.

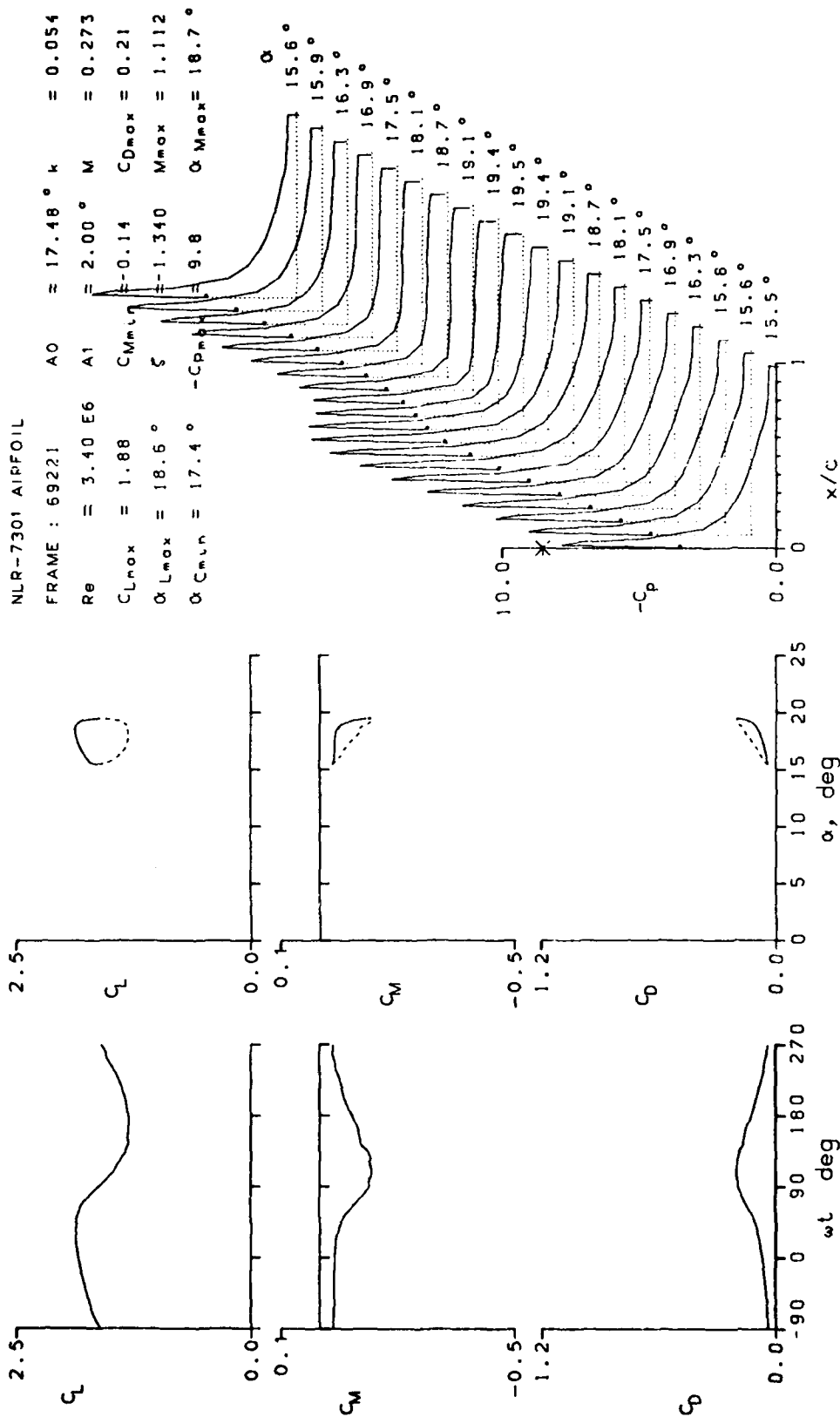


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69223	A0 = 17.48°	k = 0.221
Re = 3.29 E6	A1 = 2.00°	M = 0.265
C _{Lmax} = 1.00	C _{Mmin} = -0.21	C _{Dmax} = 0.38
α _{Lmax} = 19.4°	ξ = 0.813	M _{max} = 0.404
α _{Cmin} = 17.5°	-C _{Dmax} = 1.3	α _{Mmax} = 19.5°

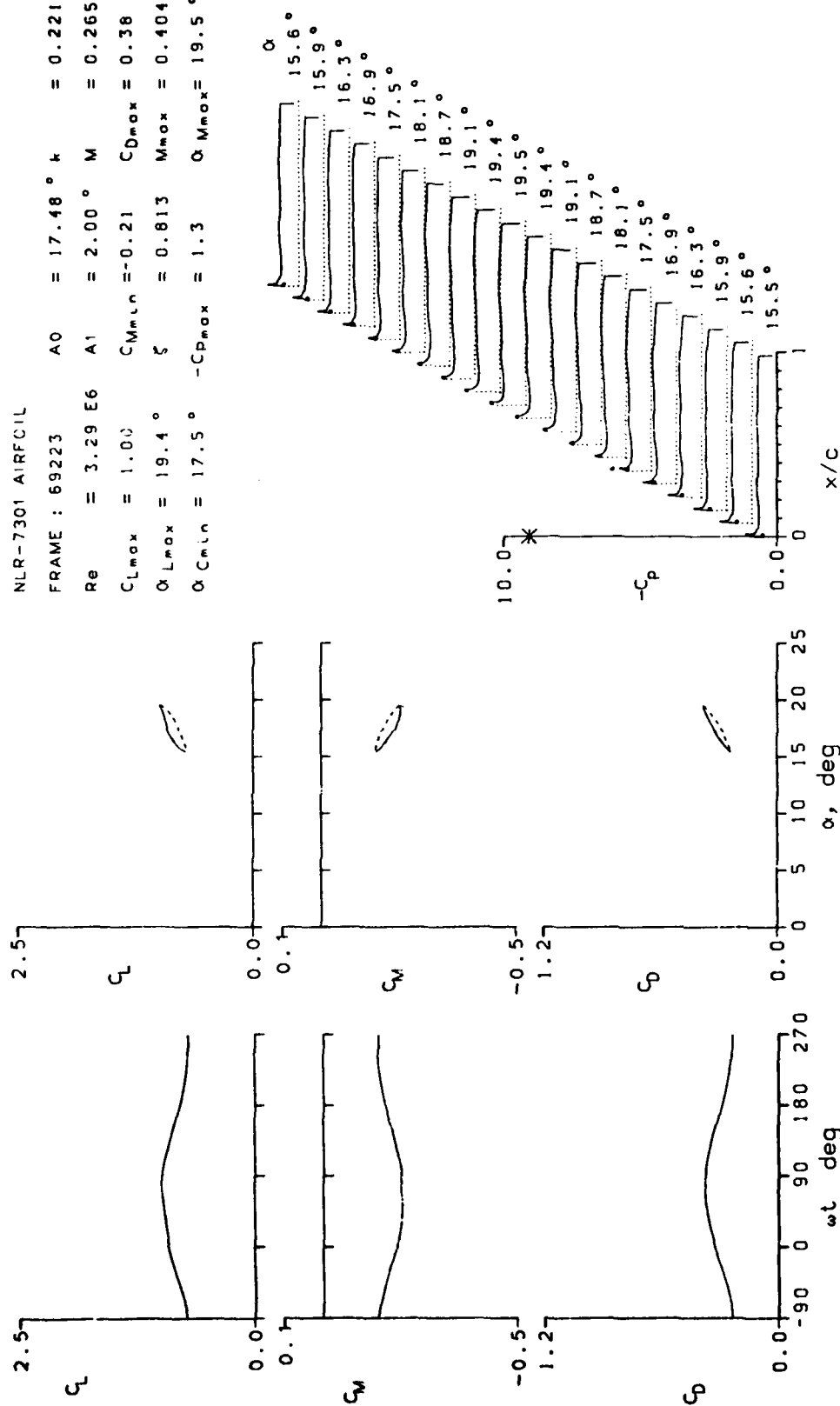


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 69304	A0 = 18.48°	k = 0.055
Re = 3.29 E6	A1 = 2.01°	M = 0.266
C _{Lmax} = 0.93	C _{Mmin} = -0.19	C _{Dmax} = 0.37
α _{Lmax} = 20.5°	ξ = 0.617	M _{max} = 0.417
α _{Cmin} = 18.5°	-C _{pmax} = 1.4	α _{Mmax} = 20.1°

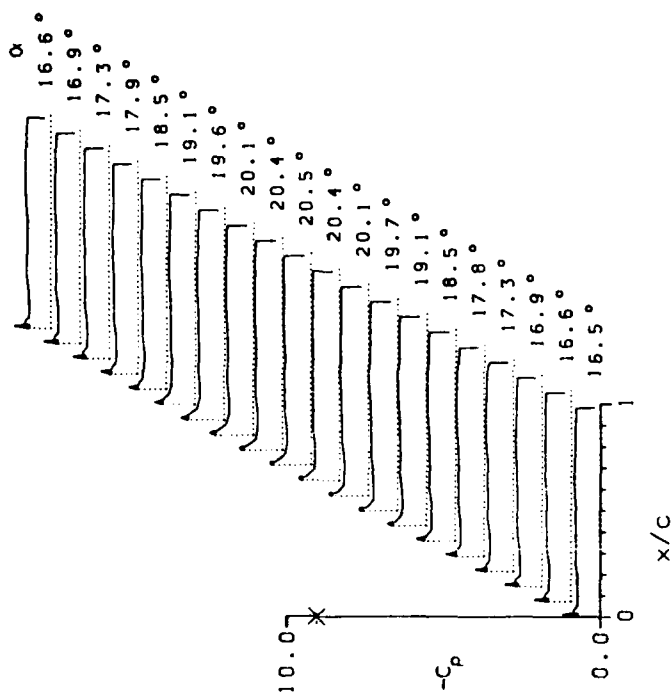
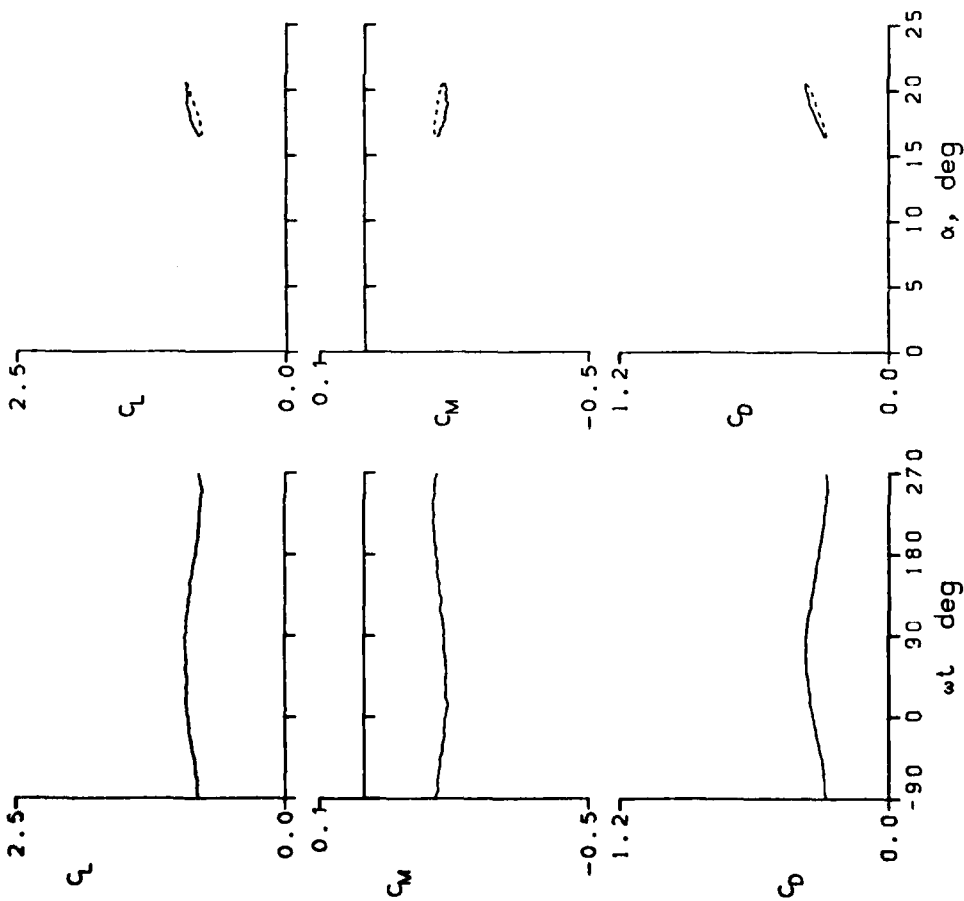


Figure 19.- Continued.

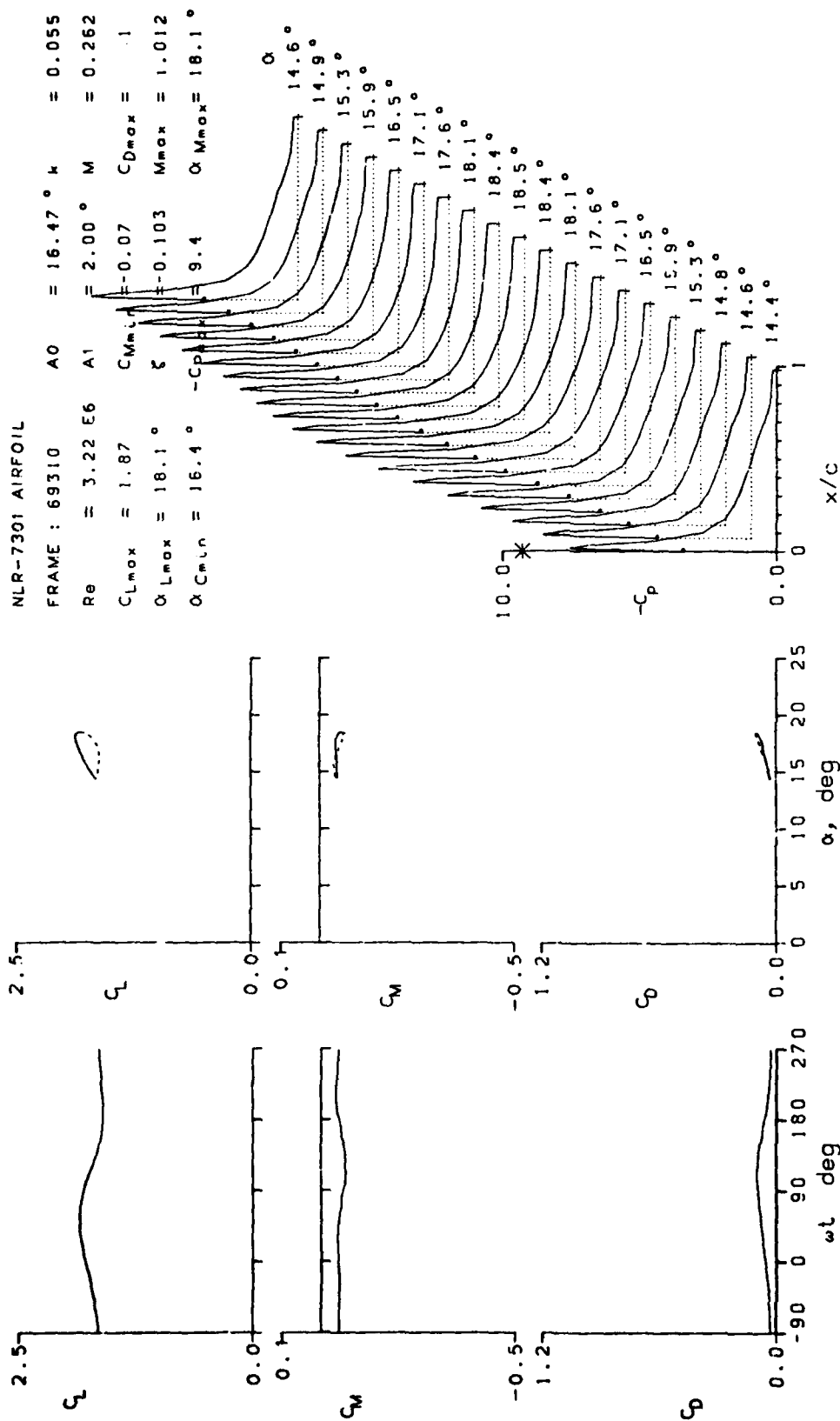


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70019	A0 = 9.22°	k = 9.024
Re = 2.34 E6	A1 = 9.94°	M = 0.185
C _{Lmax} = 1.88	C _{Mmin} = -0.11	C _{Dmax} = 0.15
α _{Lmax} = 18.8°	ξ = 0.009	M _{max} = 0.633
α _{Cmin} = 8.7°	-C _{Dmax} = 9.1	α _{Mmax} = 19.1°

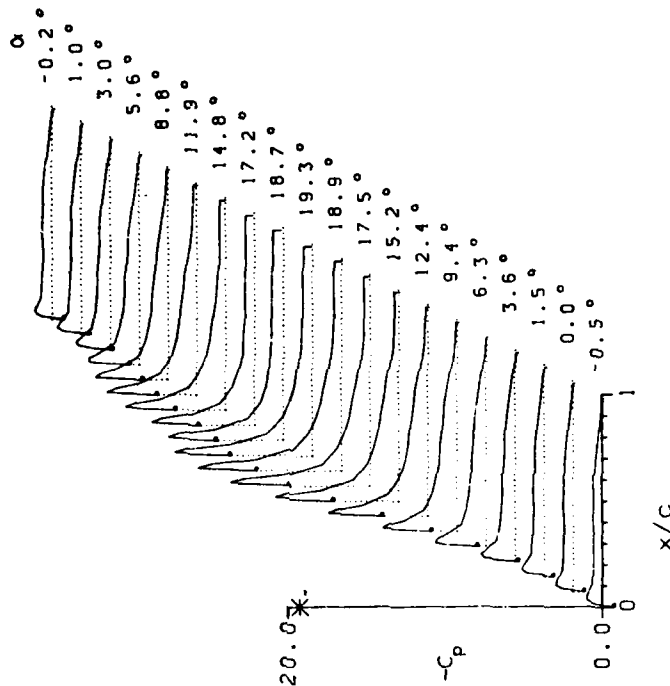
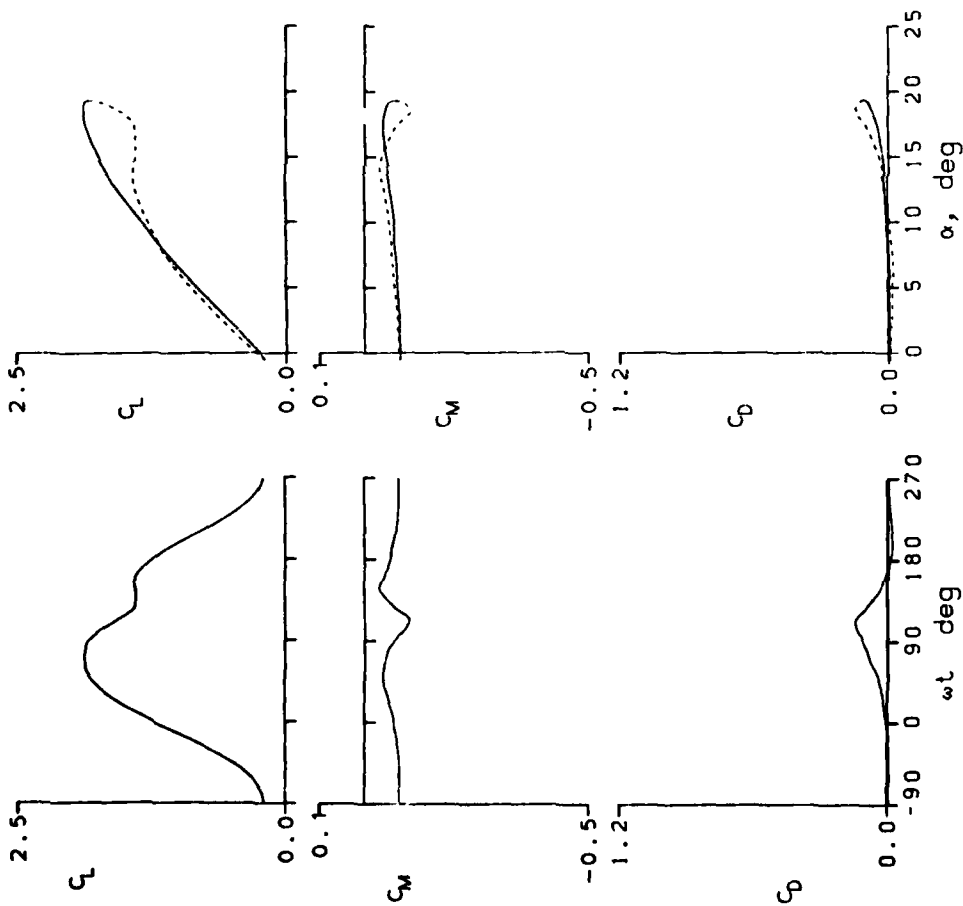


Figure 19.- Continued.

NL4-7301 AIRFOIL

FRAME : 70021	A0 = 9.22°	k = 0.097
Re = 2.34 E6	A1 = 9.94°	M = 0.185
CLmax = 2.05	CMmin = -0.09	CDmax = 0.07
αLmax = 19.1°	ξ = 0.236	Mmax = 0.672
αCmin = 8.8°	-CPmax = 10.2	αMmax = 19.3°

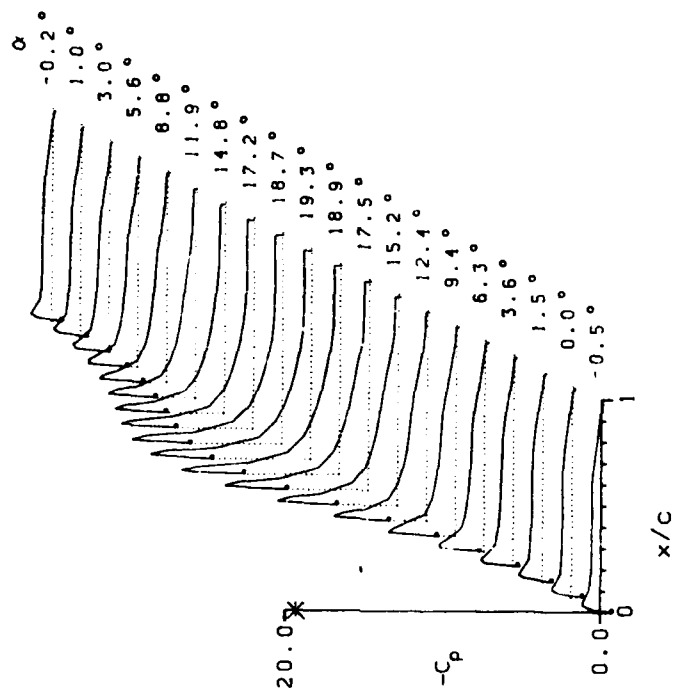
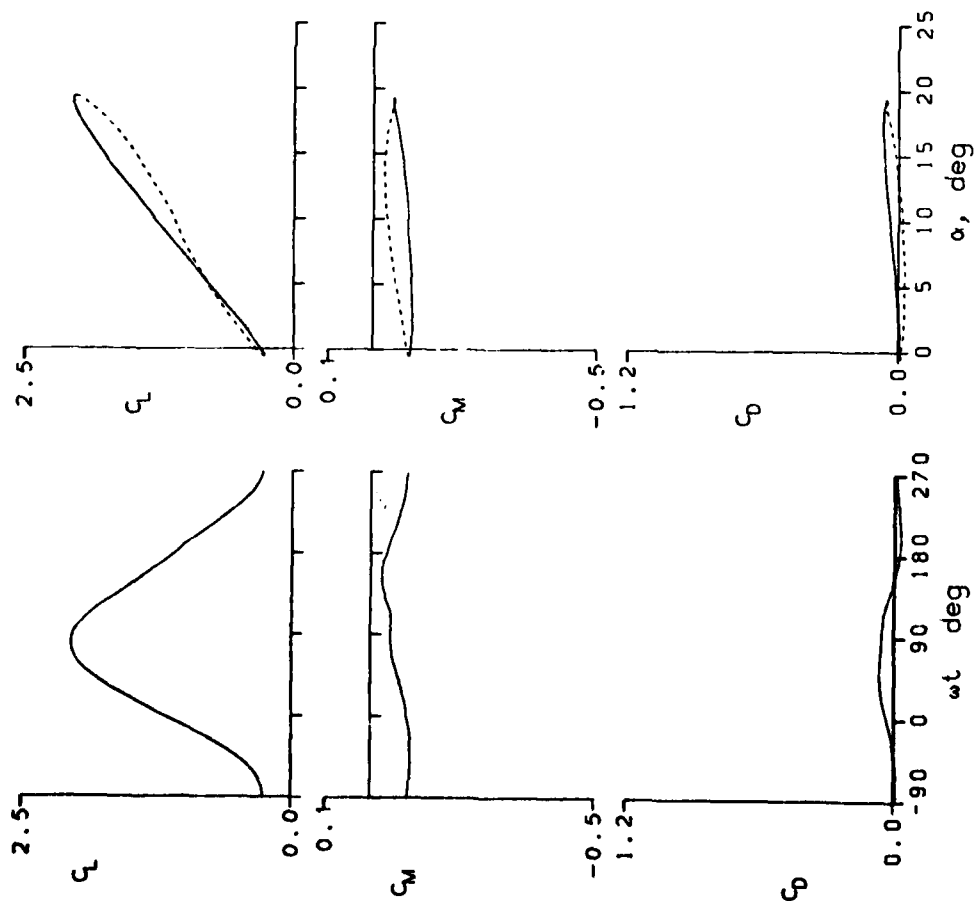


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70C23	A0 = 9.20°	k = 0.195
Re = 2.34 E6	A1 = 9.94°	M = 0.185
C _{Lmax} = 2.12	C _{Mmin} = -0.11	C _{Dmax} = 0.11
α _{Lmax} = 19.1°	ξ = 0.506	M _{max} = 0.685
α _{Cmin} = 8.7°	-C _{pmax} = 10.6	α _{Mmax} = 19.3°

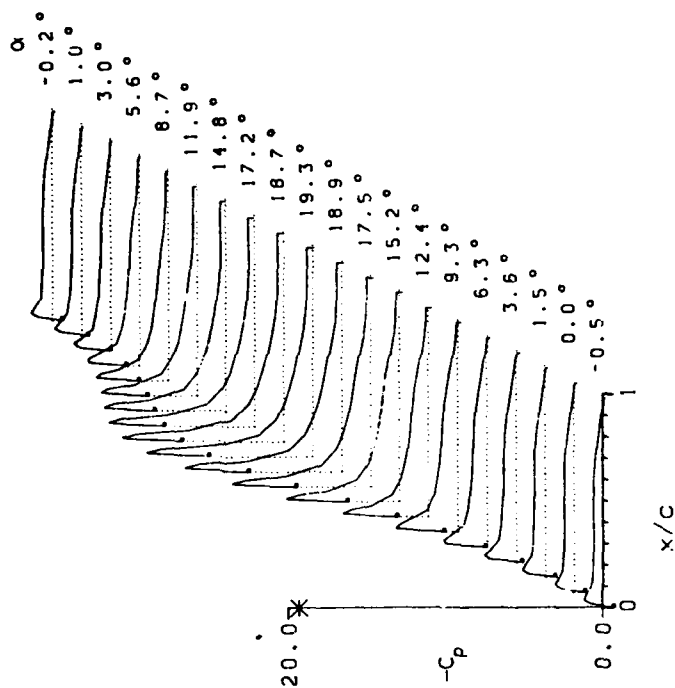
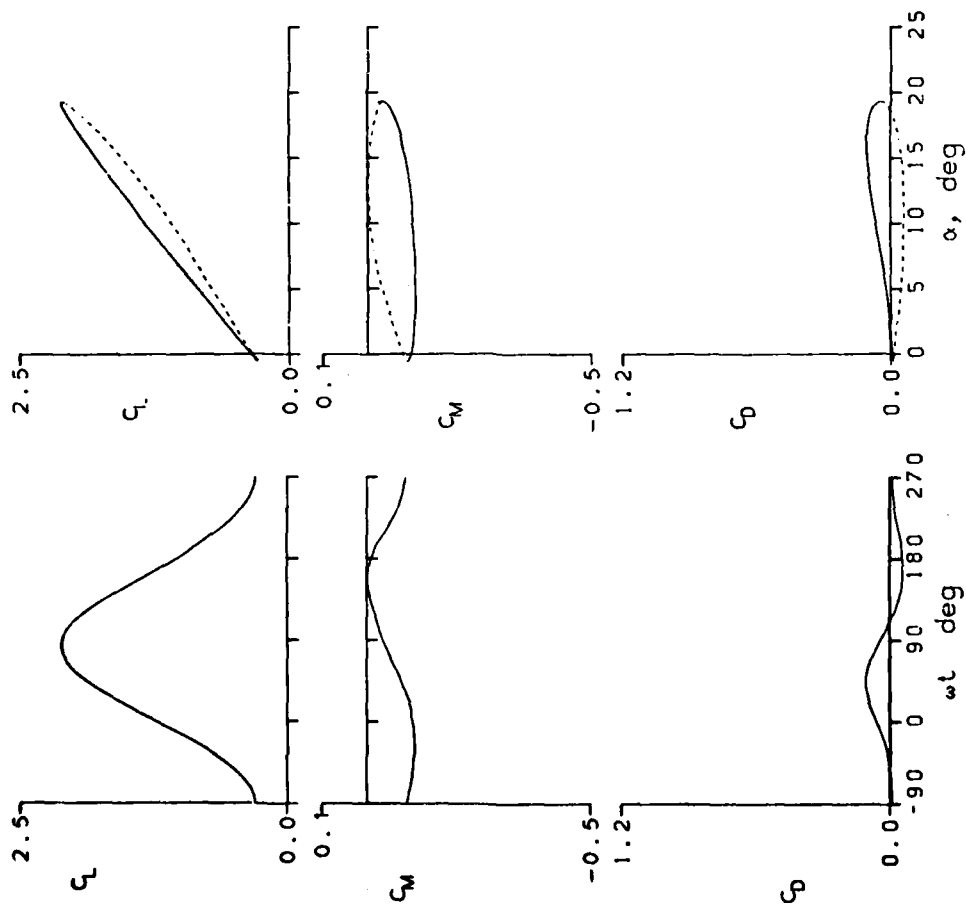


Figure 19.- Continued.

NLR-7301 AIRFOIL
 FRAME : 70107 $A_0 = 5.48^\circ$ $k = 0.010$
 $Re = 3.92 \text{ E}6$ $A_1 = 10.04^\circ$ $M = 0.301$
 $C_{Lmax} = 1.77$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.06$
 $\alpha_{Lmax} = 15.5^\circ$ $\xi = 0.014$ $M_{max} = 1.185$
 $\alpha_{Cmin} = 5.0^\circ$ $-C_{pmax} = 8.7$ $\alpha_{Mmax} = 15.7^\circ$

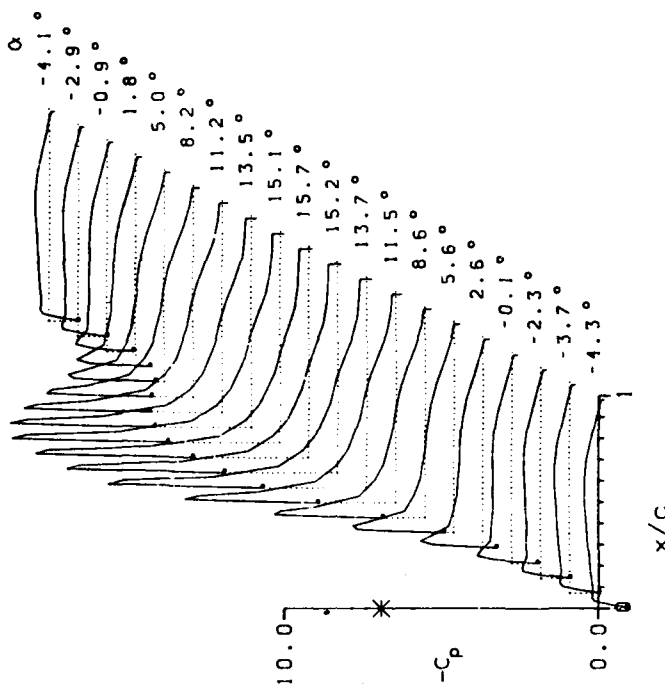
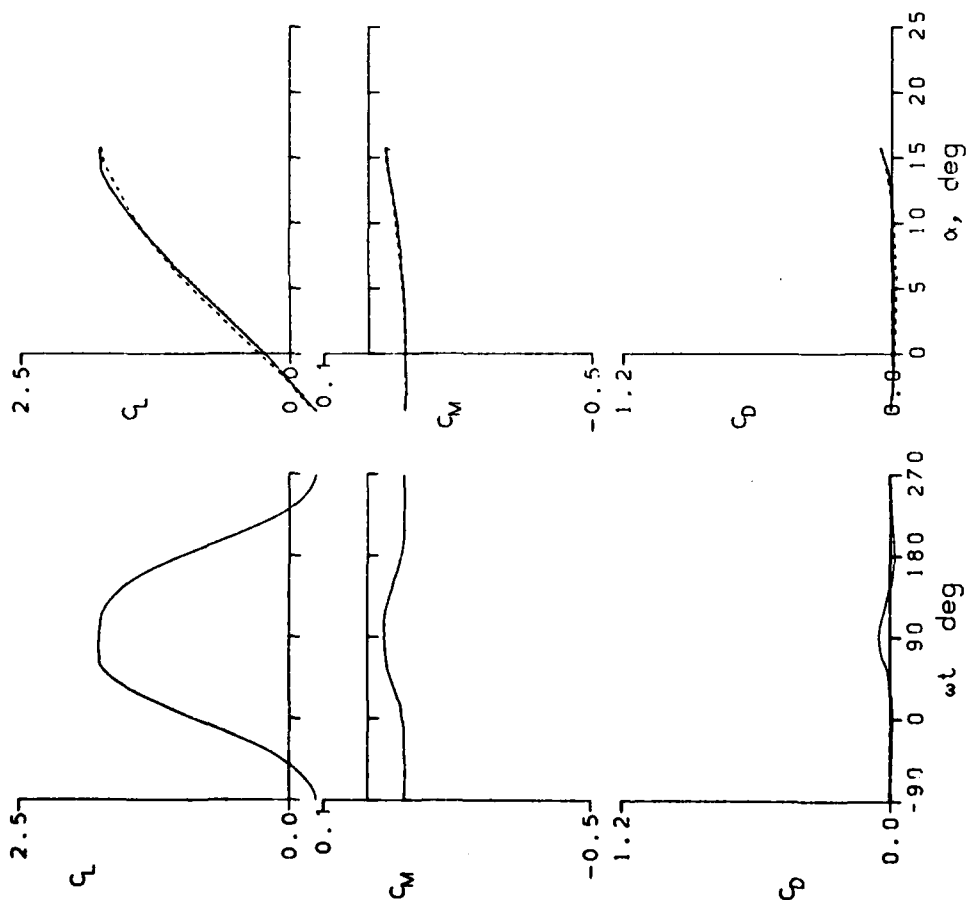


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70109 $A_0 = 5.49^\circ$ $k = 0.025$
 $Re = 3.88 \text{ E}6$ $A_1 = 10.04^\circ$ $M = 0.301$
 $C_{Lmax} = 1.81$ $C_{Mmin} = -0.09$ $C_{Dmax} = 0.05$
 $\alpha_{Lmax} = 14.8^\circ$ $\xi = 0.035$ $M_{max} = 1.198$
 $\alpha_{Cmin} = 5.0^\circ$ $-C_{pmax} = 8.8$ $\alpha_{Mmax} = 15.2^\circ$

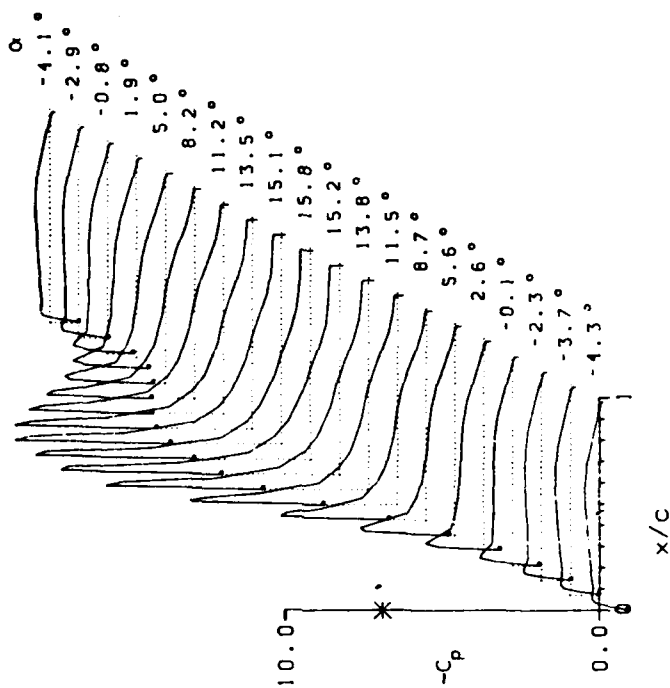
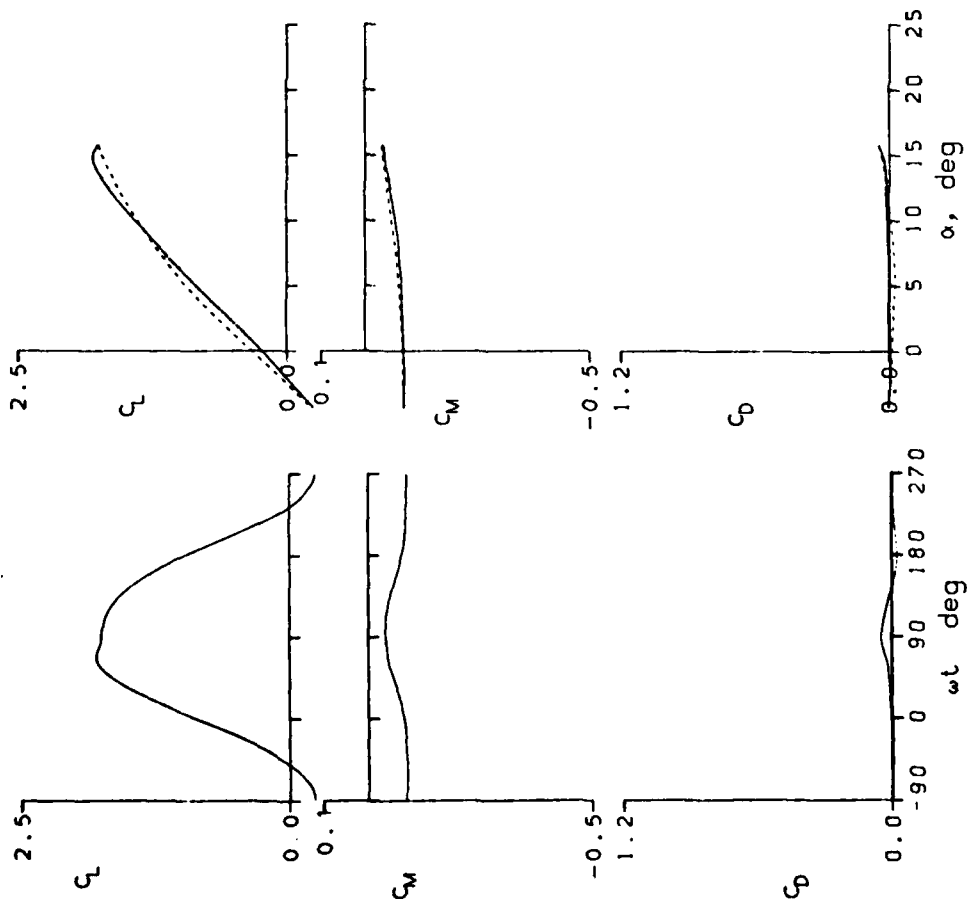


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70113	A0 = 5.49 °	k = 0.049
Re = 3.86 E6	A1 = 10.05 °	M = 0.300
C _{Lmax} = 1.85	C _{Mmin} = -0.09	C _{Dmax} = 0.04
α _{Lmax} = 15.2 °	ξ = 0.095	M _{max} = 1.222
α _{Cmin} = 5.0 °	-C _{pmax} = 9.1	α _{Mmax} = 15.6 °

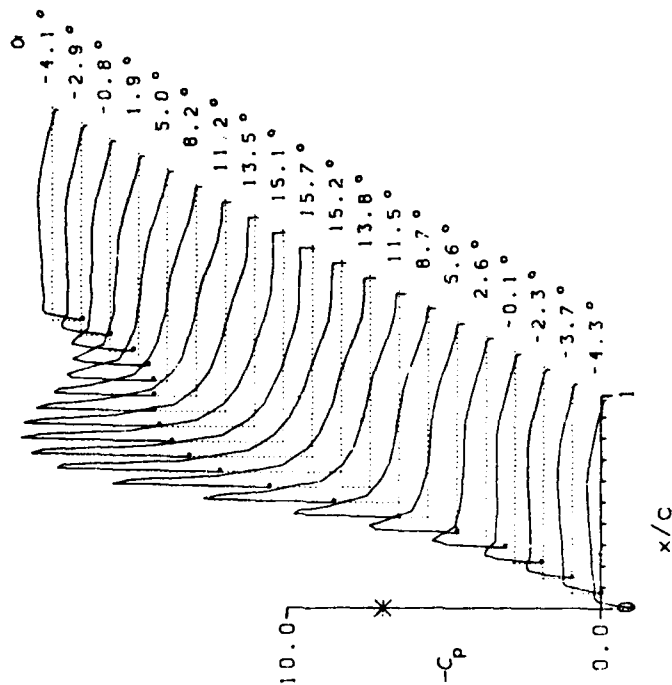
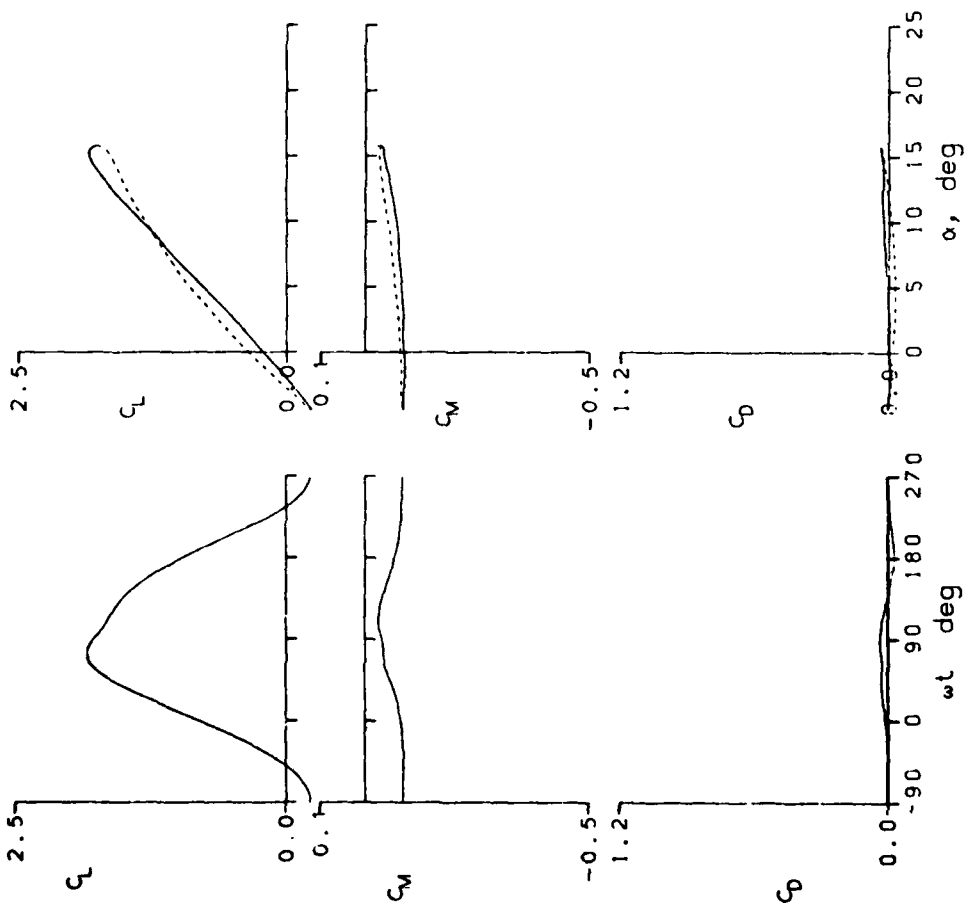


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70115	A0 = 5.48°	k = 0.099
Re = 3.85 E6	A1 = 10.04°	M = 0.301
C _{Lmax} = 1.91	C _{Mmin} = -0.10	C _{Dmax} = 0.06
α _{Lmax} = 15.6°	ξ = 0.242	M _{max} = 1.256
α _{Cmin} = 4.9°	-C _{pmax} = 9.4	α _{Mmax} = 15.7°

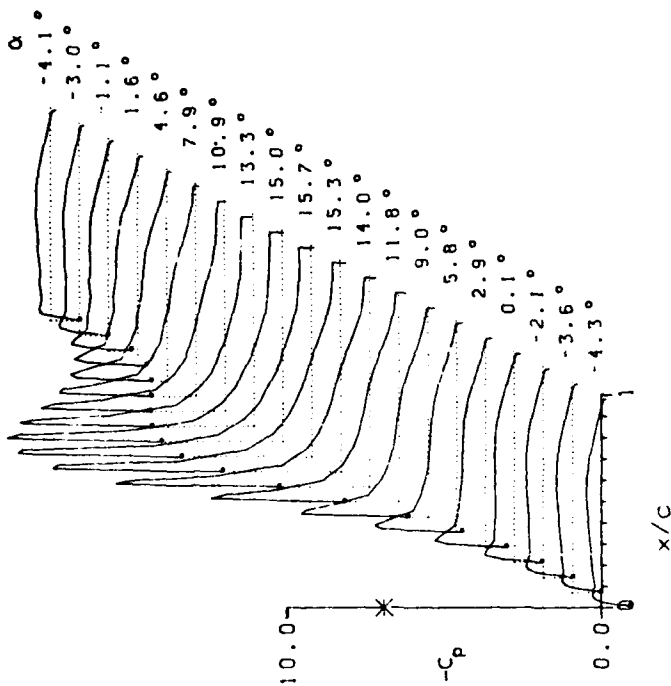
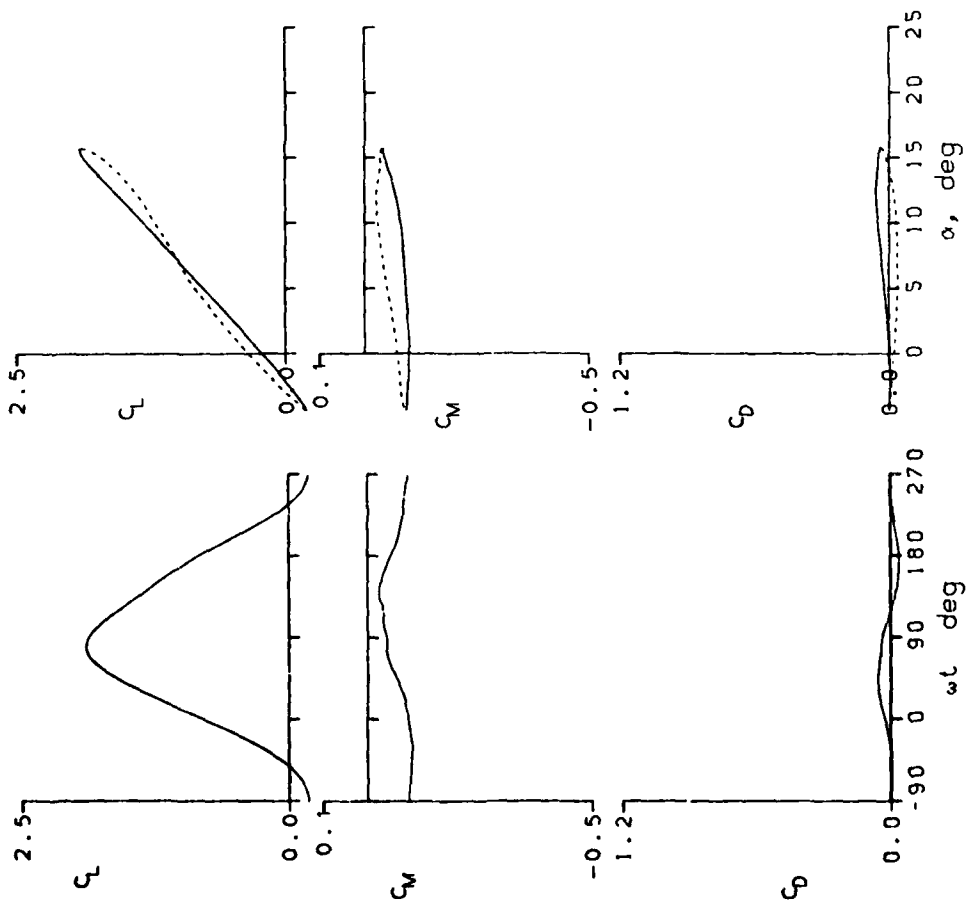


Figure 19.- Continued.

NLR-7301 AIRFOIL

FRAME : 70117	A0 = 5.55°	k = 0.148
Re = 3.84 E6	A1 = 10.04°	M = 0.301
CLmax = 1.92	CMmin = -0.11	CDmax = 0.08
αLmax = 15.7°	ξ = 0.394	Mmax = 1.264
αCMmin = 5.1°	-CDmax = 9.4	αMmax = 15.6°

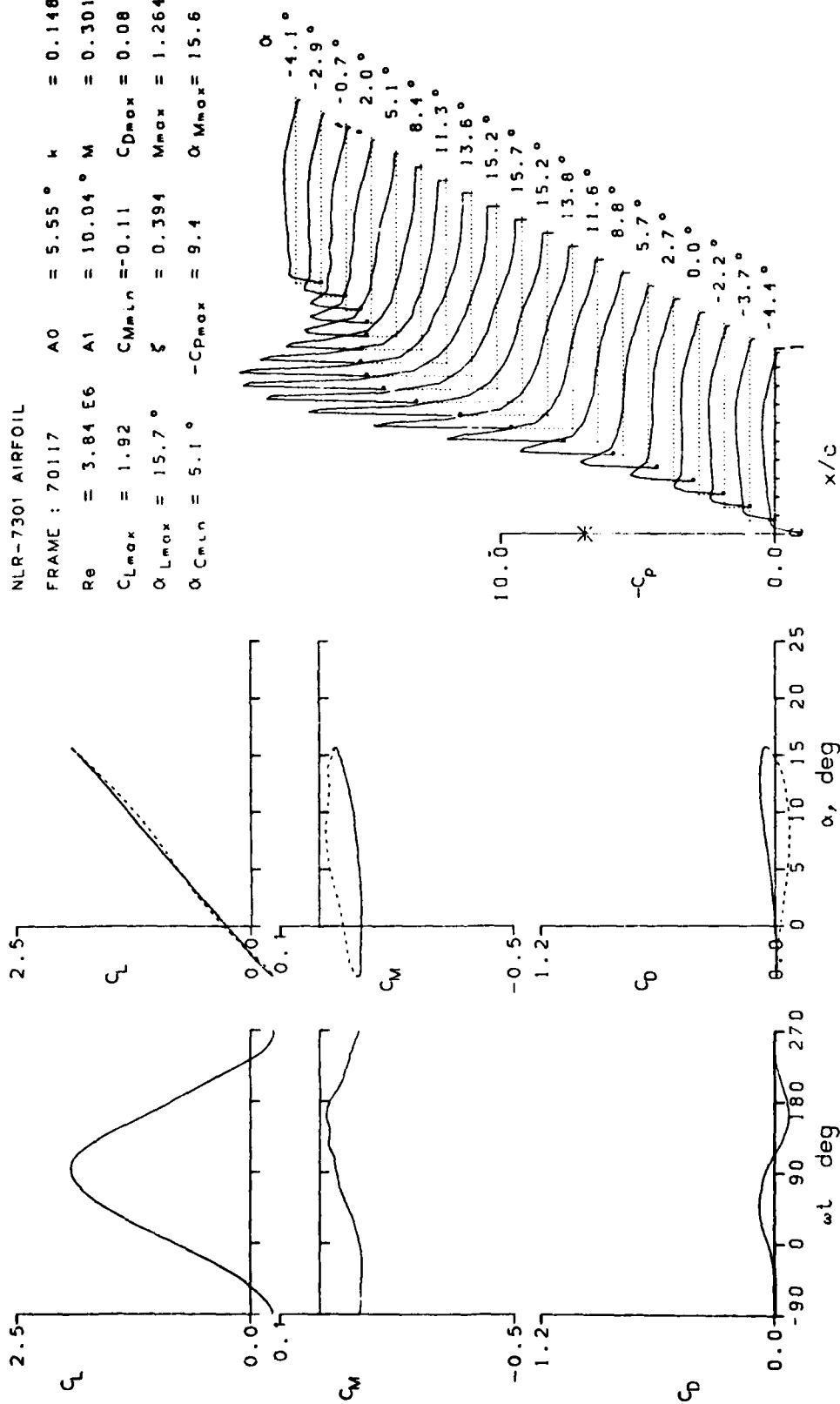


Figure 19.- Concluded.

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16. Abstract <p>→ Experimentally derived force and moment data are presented for eight airfoil sections that were tested at fixed and varying incidence in a subsonic two-dimensional stream. Airfoil incidence was varied through sinusoidal oscillations in pitch over a wide range of amplitude and frequency. The surface pressure distribution, as well as the lift, drag, and pitching moment derived therefrom, are displayed in a uniform fashion to delineate the static and dynamic characteristics of each airfoil both in and out of stall. ↙</p>					
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